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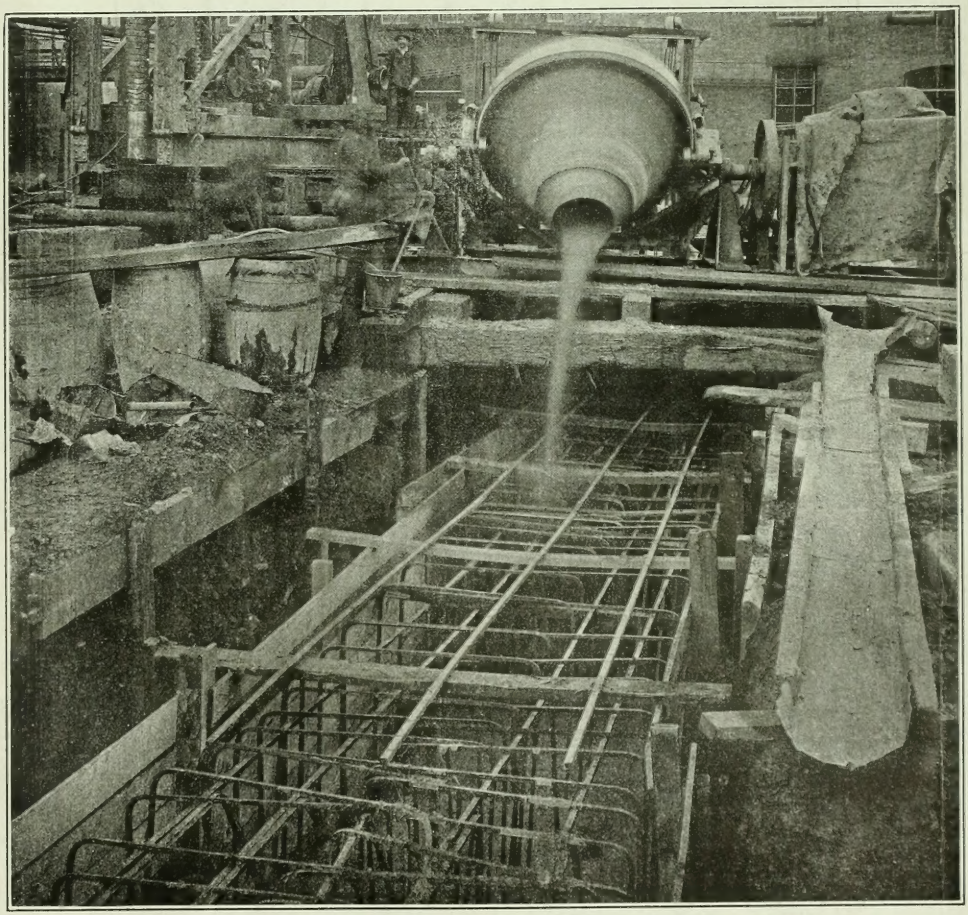
INDUSTRIAL WORLD

Published Weekly in the Interest of Iron, Steel, Coke and Allied Industries.

46th Year. No. 3. PITTSBURGH, PA. MONDAY, JANUARY 15, 1912

POURING CONCRETE FOR RECORD SIZE REINFORCED GIRDERS FOR FACTORY BUILDING ON THE NORTH SIDE, PITTSBURGH



Specially heavy foundation work for H. J. Heinz Company addition

[See page 65]

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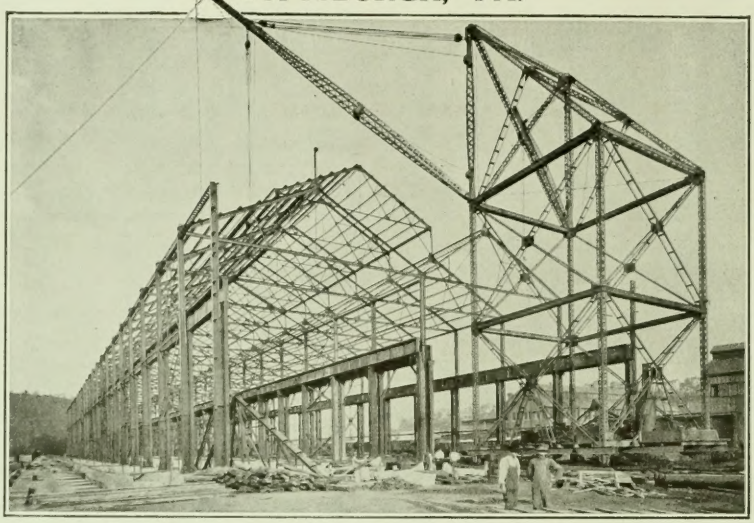
RITER-CONLEY MANUFACTURING CO.

PITTSBURGH, PA.



Erecting Open Hearth Building Containing 5,000 Tons Structural Steel.

STEEL CONSTRUCTION

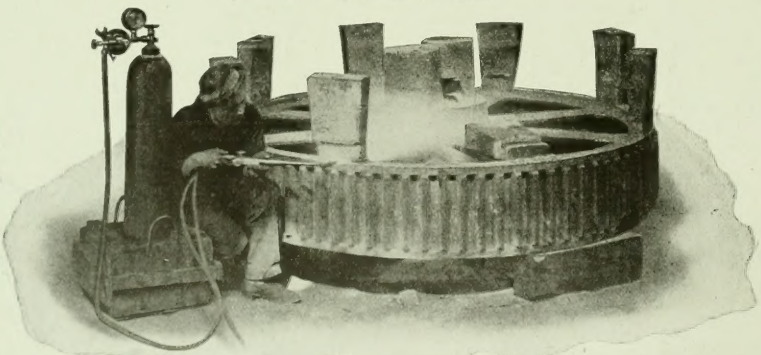
OXY-ACETYLENE

WELDING & CUTTING

APPARATUS

EFFICIENT

ECONOMICAL



SIMPLE

RELIABLE

Cutting risers from machine moulded gear at the Works of the Mesta Machine Company. These Risers which measured 4 in. x 8 in. were removed with the "UNIVERSAL CUTTER" in 1½ minutes each.

THE LINDE AIR PRODUCTS CO.

Head Office and Works: BUFFALO, N. Y.

INDUSTRIAL WORLD

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FORTY-SIXTH YEAR. PITTSBURGH, PA., JAN. 15, 1912. NUMBER THREE.

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Summary of General Iron and Steel Markets

PIG IRON.—Sales of steel making irons include 8,000 to 10,000 tons of Bessemer to points East of Pittsburgh; 25,000 tons of basic to Pittsburgh interests. Middletown (O.) consumer is inquiring for 8,000 tons basic. Southern iron still sells at $10, Birmingham, for No. 2, first quarter; No. 3 Southern having sold down to $9.50. Foundry iron prices slightly higher in Pittsburgh district; price levels at other centers generally unchanged.

CRUDE STEEL.—Prices unchanged, despite continued heavy demand. Rolling billets are being held at $20; forging billets firmly fixed at $28, Pittsburgh mill.

WIRE PRICES.—Reports early last week of an advance of $1 a ton on wire were promptly denied. No increase has yet been announced, although it is understood one is under consideration.

BARS.—Prices stiffened. Some business has been booked at 1.20c, Pittsburgh mill, as against 1.15c, the price for prompt. All merchant bar makers are quoting 1.20c for second quarter. Bar iron prices are $1 higher, minimum being 1.30 to 1.35c.

RAILS, CARS. — Pennsylvania and New York Central still are hanging back on rail estimates for 1912. Pennsylvania is expected to file its reservations this week. Pennsylvania's total requirements for steel cars, on January order, are 7,000, of which 3,800 are placed with Pittsburgh companies and 2,200 at Johnstown. Additional car order will be placed about February 1.

SHAPES, PLATES.—Market is steady and strong, 1.15c minimum on shapes and 1.20c on all except most desirable plate orders. Prices on fabricated steel have advanced $2 to $4.

SCRAP.—Market unsettled; quotations $12.50 to $13.50 on heavy melting steel. Some sales at higher figure.

Points on the Market

U. S. Steel Unfilled Orders.—United States Steel Corporation's announcement of unfilled tonnage on December 31, 1911, of 5,084,761 tons, showed the largest single month's increase yet shown by the Corporation—the gain over November 30 being 942,806 tons. This makes the gains in the last three months of 1911 total 1,473,444 tons—which breaks the Corporation's record for a single quarter since the last quarter of 1905, for which the report showed a gain of 1,739,709 tons. The last quarter of 1904 also showed a gain of over 1,650,000 tons. Comparative figures follow:

1911—	Tons	1907—	Tons
Dec. 31	5,084,761	Dec. 31	4,642,553
Nov. 30	4,141,328	Sept. 30	6,425,008
Oct. 31	3,694,328	June 30	7,603,878
Sept. 30	3,611,317	Mar. 31	8,043,858
Aug. 31	3,695,985	1906—	
July 31	3,584,085	Dec. 31,	8,489,718
June 30	3,361,058	Sept. 30	7,936,884
May 31	3,113,187	June 30	6,809,534
April 30	3,218,704	Mar. 31	7,018,712
Mar. 31	3,447,301	1905—	
Feb. 28	3,400,543	Dec. 31	7,605,086
Jan. 31	3,110,919	Sept. 30	5,865,377
1910—		June 30	4,257,794
Dec. 31	2,674,757	Mar. 31	5,402,514
Nov. 30	2,760,413	1904—	
Oct. 31	2,871,949	Dec. 31	4,696,203
Sept. 30	3,158,106	Sept. 30	3,027,436
Aug. 31	3,537,128	June 30	3,192,277
July 31	3,970,931	Mar. 31	4,136,961
June 30	4,257,794	1903—	
Mar. 31	5,402,514	Dec. 31	3,215,128
1909—		Sept. 30	3,278,742
Dec. 31	5,927,031	June 30	4,666,578
Sept. 30	4,796,833	Mar. 31	5,410,719
June 30	4,057,939	1902—	
Mar. 31	3,542,595	Dec. 31	5,347,532
1908—		Sept. 30	4,843,007
Dec. 31	3,603,527	June 30	4,791,993
Sept. 30	3,421,977		
June 30	3,313,876		
Mar. 31	3,765,343		

Open Hearths Running.—First steel was made last week at open hearth plant of Jones & Laughlin Steel Company at Aliquippa, two 250-ton tilting furnaces being put in operation at close of week. Second unit of 12 tin plate mills is in full operation, making 24 active mills. Carnegie Steel Company put in operation last week full open hearth capacity at South Sharon, Pa.

Unsold Ore on Dock.—The amount of ore on Lake Erie docks December 1 was very close to the record, being 9,131,664 tons against 9,426,681 tons a year earlier, but a larger proportion is unsold ore this season than a year ago.

PRICES NAMED FOR U. S. STEEL STOCK UNDER THE PROFIT-SHARING PLAN.

ANNOUNCEMENT TO EMPLOYES POSTED LAST WEEK AT THE PLANTS OF THE CORPORATION.

Notices have been sent to all the plants of the United States Steel Corporation, announcing the rules under under which employes may subscribe to the preferred and common stocks of the Corporation. About 25,000 shares were set aside January first, and the average price paid for these shares during the past year was slightly higher than was figured out at the close of the year, when it was believed that the common stock would be sold to employes at 62, and preferred at 108. The price finally announced is 65 for common and 110 for preferred.

This compares with the 70 for common and 114 for preferred in 1911, and 90 for common and 124 for preferred in 1910.

The employes taking stock, either preferred or common, are obliged to make applications not later than February 3, 1912, and the first deductions for payments will be taken from February salaries. No employe is allowed to take both common and preferred stock, but must take one or the other.

Number of shares taken for 1911 is not announced, as the annual report which gives that information is not yet published. The following are the number of shares taken in previous years:

PREFERRED STOCK.

YEAR.	PRICE	NUMBER SHARES TAKEN
1912	110	.....
1911	114	.....
1910	124	19,229
1909	110	25,000
1908	87.50	25,000
1907	102	27,032
1906	100	23,989
1905	87.50	17,973
1904	55	32,156
1903	82.50	48,983

COMMON STOCK.

1912	65	.....
1911	70	.....
1910	90	29,119
1909	50	15,318

Payments on the stock subscribed for by the employes will be made in the usual way, a certain percentage of the salary of the subscriber being deducted each month. Should the subscription be cancelled, the payments paid in and interest will be paid over to the owner of the cancelled stock.

The 1912 Announcement.

Full particulars in regard to the profit-sharing plan are contained in an official circular made public after a meeting of the finance committee last week by Secretary Trimble.

The circular says in part: "Payment of the subscriptions shall be in monthly installments, to be deducted from the salary or wages of the subscriber, in such amounts as he may wish, subject to the provision that the minimum amount of a monthly installment shall be $2.50 per share for preferred stock and $1.50 per share for common stock, and that no installment shall exceed 25 per cent of any one month's salary or wages. It is hoped subscribers will pay their installments in even dollars, but if more than the minimum is paid it must be in even dollars. The stock must be paid for within three years. Interest at 5 per cent per annum will be charged on deferred payments on the stock.

"From the date on which payments begin and during the continuation of such payments the dividends on the stock will be credited to the account of the subscriber as part of his payments until the stock is fully paid and issued to him, after which dividends will be paid to him as to other stockholders.

Cancellations.

"Subscriptions will be canceled: (1) At the request of the subscriber; (b) by leaving the service or failing to resume employment when requested; (c) whenever payments on account of subscription shall have been discontinued without the consent of the Corporation for a period of three months; thereupon, the subscription and all interest in the stock to which the same relates shall be terminated and there will be returned to the subscriber the exact amount of his payments made on account, with interest at 5 per cent per annum on the same from time of payment, no credit being given him for dividends or for the special allowance referred to in third paragraph of section 7, and no interest being charged on deferred payments. A subscriber who cancels his subscription must cancel all of it.

"When the stock is fully paid for it will be issued in the name of the subscriber. He may sell his certificate whenever he chooses, but as an inducement for him to keep it while he remains in the service the following offer is made, viz.:

"'If he keep the stock and in January of each year, for five years, commencing with January, 1913, will exhibit the certificate to the treasurer of his company, together with a statement from a proper official that he has been continuously in the employ of the corporation or of one or another of its subsidiary companies during the preceding year, and has shown a proper interest in its welfare and progress, he will for each of such five years receive a cash payment at the rate of $5 a share for each share of preferred stock and $3.50 a share for each share of common stock.

"'Subscribers who may not have fully paid their subscriptions by January in any year will, if their subscriptions are still in force, and they have otherwise fulfilled all the conditions of continuous and faithful service as provided, be credited in their subscription accounts with the special allowance of $5 per share on their subscriptions for common stock.'"

PLANT RESUMPTIONS.

Full Open Hearth Capacity.

The Carnegie "South works" at Sharon started last week to operate with its full 12 open hearths, bringing the plant up to to full capacity. The No. 1 blast furnace at this plant was lighted January 5. Fifteen additional coke ovens became active last week. The Carnegie Company's skelp mill at South Sharon will resume the coming week. It has been idle 18 months.

Inspect Steel Foundries Plant.

Officials of the American Steel Foundries Company inspected the plants at Alliance, O., and Sharon, Pa., last week. The Alliance plant is running at 60 per cent of capacity. The Sharon plant is to resume shortly on the Davis car wheel, which the company put on the market last year. The Sharon plant is being equipped with an automatic sprinkler system.

Start Aliquippa Open Hearths.

The Jones & Laughlin Steel Company started the first two 250-ton open hearth tilting furnaces at its Aliquippa plant last week. Two more will be put in operation the coming week. The company has large tonnages of scrap on hand for its open hearth operations.

Car Plant Resumption.

The Standard Steel Car Company increased operating capacity at its Butler (Pa.) plant last week. Neither open hearth plant nor car shops is yet running full time.

Independent Refinery in Operation

The new Bruin, Pa., refinery of the High Grade Oil Refining Company, has been placed in operation. The refinery has a capacity of 20,000 barrels and cost $250,000. Pipe lines have been laid to the North Washington, Petrolia, Fairview and Chicora oil fields. Arrangements have been made to locate loading racks

at Renfrew, Bakerstown and Valencia on the Baltimore & Ohio Railroad. The oil will be shipped to Bruin. The company has 30 new tank cars ready for service.

IN WAREHOUSE BUSINESS.

Subsidiary of Youngstown Sheet & Tube Company Announces Plans.

The advent of the Youngstown Sheet & Tube interests into the warehouse and pipe supply fields, was foreshadowed last week by the announcement that the Continental Supply Company, with a capital stock of $1,000,000 had been chartered under the laws of Ohio, and will open offices in St. Louis, as selling agents of oil country goods for the Youngstown Sheet & Tube Company, Youngstown, O., and will also handle a complete line of oil country tools and machines.

Sumner Merrick, formerly identified with the Oil Well Supply Company, Pittsburgh, is president of the newly-organized company. W. W. Wilkinson, Jr., and two or three others formerly connected with the Oil Well Supply Company, will be identified with the new company.

Until January 1, 1912, the Oil Well Supply Company represented the Youngstown Sheet & Tube Company in handling oil country goods.

A NEW NAIL PRODUCER.

Plant is Being Remodeled at Ellwood City.

The American Steel Company, Park building, Pittsburgh, has a force of men at work preparing the wire nail plant, at Ellwood City, Pa., for operation.

The company bought this plant, known as the McCrory plant, last month, and will put the 16 nail machines in operation as soon as possible, making both cement coated and ordinary nails. It intends to add 64 new machines, making a total of 80 in the plant, and intends also to add sufficient wire drawing blocks to supply the 80 nail machines, as well as machinery for making other wire specialties. These improvements are expected to be completed by midsummer.

The McCrory plant originally occupied a tract of land 200 by 200 feet, but 1,000 feet additional frontage on the railroad has been secured. The American Steel Company has for some time owned the Dillon-Griswold wire and nail plant at Sterling, Ill., and may move some of the machinery to Ellwood City in connection with the improvements just undertaken.

Italian Navy adopted Yarrow (English) boilers for new battleship.

EQUIPMENT NEWS

Stoker Sales.

The Jones Underfeed Stoker Company, with offices in the Park building, Pittsburgh, has completed the installation of stokers to operate ten 200-horsepower boilers in the power plant of the Atlantic Refining Company at Fifty-seventh street, Pittsburgh. The company has also received an order for a stoker for a 200-horsepower boiler for the Pennsylvania Casting & Machine Company, Northside, Pittsburgh.

Wrecking Apparatus.

The Pennsylvania Railroad Company has placed orders with the Linde Air Products Company, Farmers bank building, Pittsburgh, for oxy-coal gas apparatus for the equipment of a number of its wreck trains. The apparatus is to be used for cutting up steel car wreckage so that it can be handled promptly.

To Enlarge Enameling Plant.

The Witherow Manufacturing Company, formerly Volkommer & Company, manufacturers of enamel and enameling materials, with offices in the Empire building, Pittsburgh, are arranging to double the capacity of their works at Sheridan, Pa. The company placed an order last week with the Bessemer Gas Engine Company, Bessemer building, Pittsburgh, for a gas driven compressor, to be installed in its works. Officials of the company state that sales for last year increased over 100 per cent over any previous year.

New Home for Machinery Company.

The Baird Machinery Company has contracted for the first three floors of the new building to be erected at Penn avenue and Water street, Pittsburgh, by the Point Improvement Company. The building will be an eight-story structure of reinforced concrete with brick facing. It will be triangular in shape, 110x126x138 feet, and will cost $200,000.

A contract for the erection of the building has been awarded to the George Hogg Company. Work will be commenced within 30 days and the building will be ready for occupancy by October 1, 1912.

Open Pittsburgh Office.

The Williamson Brothers Company, of Philadelphia, the American Ship Windlass Company and the Taylor Stoker Company, of Providence, R. I., have consolidated under the name of the American Engineering Company. The manufacturing, sales and engineering departments of the three companies have been concentrated at the works of Williamson Brothers Company, Philadelphia, which have been enlarged and equipped for the manufacture of the products of the constituent concerns. D. D. Pendleton, 2437 Oliver building, is representing the new company in the Pittsburgh district.

Investigating Powdered Coal as Fuel.

City officials of Pittsburgh who went to Lebanon, Pa., recently for the purpose of inspecting the American Iron & Steel Manufacturing Company's method of using powdered coal as a fuel for its furnaces and power plant were informed that the fuel consumption had been increased during the last year from 200 to 300 tons a day and at the Reading plant from 60 to 100 tons. The working force at the Lebanon plant had been increased from 3,000 to 4,000, and the output of the works in proportion. The saving of fuel cost, including handling, had been increased to 40 per cent as against 30 per cent the previous year, over the cost of hand-firing methods.

Representatives of two manufacturing companies in Pittsburgh are arranging to make an inspection of the plant with a view of having their plants equipped for the use of powdered fuel. John P. Brock, vice president and resident manager of the works offered to supply any information desired by those interested in the process. The visit of the Pittsburgh inspection party to Lebanon was described by the INDUSTRIAL WORLD last week.

Water Cooling Tower.

The Pittsburgh Brewing Company has placed an order with D. D. Pendleton, Oliver building, Pittsburgh, for the installation of a Wheeler-Barnard water cooling tower in the Iron City Brewery. The tower is built by the Wheeler Condenser & Engineering Company, Carteret, N. J. It is rectangular in shape and designed to handle 1,500,000 gallons of water daily. The water is pumped to the top, after which it filters down through mats and is cooled by a draught of air forced upward.

Structural Steel for Building.

The Thompson-Starrett Company has placed an order with the McClintic-Marshall Construction Company for 400 tons of steel to be used in the erection of the Union National Bank building, at Clarksburg, W. Va. The steel will be fabricated at the company's Pottstown, Pa., plant. The building will be 41x100 feet and fourteen stories.

New Paper Warehouse.

James Stewart & Company, who have the contract for the erection of a reinforced concrete warehouse building for

the Alling & Cory Company on the Northside, Pittsburgh, have commenced driving piles for the foundations of the building. The work of construction will be started early in the spring.

Elevators and Warehouse Fixtures.

Hunting & Davis, architects, Farmers Bank building, Pittsburgh, are asking bids on two electric freight elevators and one electric passenger elevator, with other warehouse fixtures, for the proposed warehouse of the Alling & Cory Company, River avenue and Federal street, Northside, Pittsburgh. James Stewart & Company are general contractors on the building, which will be 110x223, six stories.

Oil Burning Furnaces for Gary.

The Pittsburgh Screw & Bolt Company has placed a contract with Tate, Jones & Company, Pittsburgh, for the equipment of the plant of the Gary Screw & Bolt Company, at Gary, Ind., with oil-burning heating furnaces.

Planing Mill Equipment.

Inquiries are out on the equipment for a planing mill at Canton, O., for F. J. Berdel, Ervin block. The building will be constructed of tile blocks, 35x70 feet, two stories high. Among the equipment to be installed will be wood working machinery, 10 horsepower electric motor, hangers, pulleys and shafting, leather belting, etc.

Order for Forge Press.

The United Engineering & Foundry Company is building a 42-ton steam hydraulic forge press, 600 tons capacity, for the A. B. Wightman Company, Philadelphia. The castings were turned out at the company's Vandergrift (Pa.) plant, and the machine is being finished at the Lloyd-Booth shop, Youngstown.

Gas Engine Company Opens Western Offices.

The Bessemer Gas Engine Company, Grove City, Pa., has opened an office in the Michigan building, Wichita, Kan., with C. H. Rittenhouse in charge; and an office in the Acme building, Bakersfield, Cal., in charge of J. M. Brown. A car load of engines, to fill orders from the latter office, was shipped last week. Other orders received by the company last month included the Champion Tool Company, Meadville, Pa., a 50-horse-engine; Consolidated Coal Company, Fairmont, W. Va., 5-horsepower engine; Lisbon Lime Company, Lisbon, O., 40-horsepower engine; the Ludowici Celadon Company, 150-horsepower engine; United States Pipe Line Company, 5-horsepower engine; South Penn Oil Company, 50-horsepower engine for installation at Pullman, W. Va.; Caddo Gas & Oil Company, Shreveport, La., 165-horsepower gas-driven compressor; Henry Gas Company, Bartlesville, Okla., 165-horsepower gas-driven compressor; U. S. G. Waldron, Evans City Pa., 15-horsepower gas-driven compressor; Boylen & Company, Harrisville, W. Va., 35-horsepower engine; J. L. Carper, West Hamlin, W. Va., 35-horsepower engine; Levi M. Rhodes, Connoquenessing, Pa., 20-horsepower engine; Old Fields Lumber Company, M'Neill, W. Va., 25-horsepower engine, and the A. H. Bahr Lumber Company, Cleveland, 25-horsepower engine.

QUEMAHONING DAM.

Cambria Steel Company's Impounding Reservoir Is Completed.

The Big Quemahoning dam erected on Quemahoning creek, near Holsopple, Somerset county, Pa., is almost completed, but will not be put into commission before next October. Nevertheless, water was turned into the 15 miles of steel pipe, recently, to test the line, and only a few inconsequential leaks were found.

The Quemahoning dam, when completed, will be the largest artificial body of water in the State. It was built by the Builders & Manufacturers' Water Company, a subsidiary concern of the Cambria Steel Company, of Johnstown, capitalized at $4,000,000.

Work was begun on the dam in 1908; it covers about 1,000 acres and drains a water shed of 90 square miles; it will hold when completed, about 11,000,000,000 gallons ,and its breast is 1,100 feet wide from hill to hill,' and 700 feet wide at its base.

The pipe line material was manufactured by the Cambria Steel Company. The pipes are riveted together like a boiler for a continuous stretch of 15 miles. The pipe at the intake is 66 inches in diameter, and 56 inches at the other end. The pipe line passes through four tunnels—at Kauffman's Run, near Foustwell; at Yoder Falls, at Hogback, and at Green Hill, Pa. One of the tunnels is about a half mile long, while the four of them have an aggregate length of about three miles.

In addition to the system of pipes to prevent overflow, there is a spillway 230 feet wide.

The breast of the dam has a concrete core, which extends down to a bed of solid rock. It is estimated that this wall contains about 20,000 cubic yards of concrete.

At the present time the Quemahoning dam contains about 40 feet of water. This is what is known as the second stage. The breast of the dam allows for a maximum depth of 80 feet.

TRADE MEETINGS

Pittsburgh Chapter, American Institute of Electrical Engineers.

Pittsburgh chapter, American Institute of Electrical Engineers, at a regular monthly meeting last week, heard a paper by W. A. Thomas, of the Westinghouse interests, on "Central Station Power in Coal Mines." A brisk discussion of the paper followed, led by W. E. Moore, of the West Penn Railways Company. The committee on the coming annual banquet of the chapter, to be held at the Ft. Pitt hotel, on February 17, reported that it was not quite ready to announce definitely its list of speakers. The list will be forthcoming in a week or two.

Heating and Ventilating Engineers.

The annual meeting of the American Society of Heating & Ventilating Engineers is set for January 23, 24 and 25, in the Engineering Societies building, New York. The nominating committee of the society has placed in nomination the following candidates for office in 1912:

President—John R. Allen, Ann Arbor, Mich.; August Kehm, Chicago.

First vice president—Albert B. Franklin, Boston; John F. Hale, Camden, N. J.

Second vice president—E. F. Capron, Chicago; Ralph Collamore, Detroit.

Secretary—W. W. Macon, New York; Melvern F. Thomas, New York.

Treasurer—James A. Donnelly, New York; U. G. Scollay, Brooklyn.

Bord of Governors—Reginald Pelhant Bolton, New York; A. A. Cryer, New York; James H. Davis, Chicago; James D. Hoffman, Lincoln, Neb.; D. D. Kimball, New York; George W. Knight, Newark, N. J.; S. R. Lewis, Chicago; William M. Mackey, New York; W. H. McKiever, New York; N. S. Thompson, Washington, D. C.

Western Glass & Pottery Association.

Members of the Western Pottery & Glass Association held their annual dinner in Pittsburgh January 8. Speakers included Rabbi J. Leonard Levi, on "The Glass of Fashion"; W. E. Wells, of Newell, W. Va., on "Prospects"; J. A. Knox, on "Glass," and Manager William A. Donkin, of the Pittsburgh Industrial Development Commission, on "Pittsburgh Promotes Progress."

The officers of the association are: W. W. Lang, president; J. G. Kaufmann, secretary; Robert West, treasurer; H. L. Dixon, first vice president, and W. J. Patterson, second vice president.

Manufacturers and Contractors' Club.

At last Tuesday's meeting of the Manufacturers and Contractors' Club, in the Lewis building, the final report was heard from the banquet committee on speakers for the club's annual banquet, at the Fort Pitt Hotel, on the evening

of January 23. The announcement for the banquet carries the club motto—"Good Fellowship and the Betterment of the Building Interests." D. L. Gillespie, of D. L. Gillespie & Company, will act as toastmaster. The speakers, as far as announced, will be:

Mayor W. A. Magee; Hon. John M. Goehring, president Pittsburgh city councils; F. R. Babcock, president Pittsburgh Chamber of Commerce; C. P. Hill, Doubleday-Hill Company; Architect Edward Stolz; Hon C. M. Kelly, member of State Legislature; A. T. Burns, Pittsburgh Civic Commission.

PERSONAL

Robert H. Anderson, who has been connected with the office of the George T. Ladd Company, Farmers Bank building, Pittsburgh, has been transferred to the selling force. Mr. Anderson will represent the steam specialty department in the Pittsburgh district.

V V

Charles W. Goodnough has assumed the office of second vice president of the Pittsburgh Stove & Range Company.

V V

C. E. Hull, 602 Machesney building, Pittsburgh, has recently established headquarters representing the Ohio Elevator & Machine Company, Columbus, Ohio.

CALIFORNIA PIPE LINE.

Contract for 12-Inch Pipe Placed—Fittings Proposals Still Open.

Contract for 124 miles of 12-inch line pipe, for the Midway Gas Company, of Los Angeles, California, was placed last week with the National Tube Company. The contract aggregates 11,000 tons.

According to cable advices, British German pipe-makers submitted bids on the material, but failed to figure low enough.

The lettings for valves and fittings are yet to be placed.

INDUSTRIAL FIRES.

MINNEAPOLIS.—Plant of Waterman Implement Company (farming implements), completely destroyed in fire January 7; loss, $100,000. Janney-Semple-Hill Company, heavy hardware, sustained $10,000 damage.

* * *

CARNEGIE, PA. — McClintic-Marshall Construction Company sustained $4,000 damage, January 9, by fire in riveting shop.

Gary Plant Almost Ready.

The new plant at Gary, Ind., of the Gary Bolt & Screw Company, a subsidiary of the Pittsburgh Screw & Bolt Company, erected at a cost of $1,000,000, will begin operations March 1, with 1,000 hands.

HEAVY REINFORCED CONCRETE GIRDERS FOR NORTH SIDE FACTORY BUILDING.

[See Illustration on Front Cover.]

POSSIBLY the heaviest reinforced concrete girders yet built in the Pittsburgh district were recently completed for an addition to the H. J. Heinz Company works, Northside, Pittsburgh. Six beams were constructed to span Butchers' Run sewer and support the center tier of columns in a five-story building. They were from 40 to 46 feet long, six feet wide and seven feet deep. Each column base was designed to support a weight of 300 tons.

The illustration on the cover page of this number shows the method employed in the construction of a 44-foot girder with reinforcing bars of steel placed in position and concrete being poured into the form.

The Raymond Concrete Pile Company, with offices in the Union Bank building, Pittsburgh, had the contract for the concrete foundations of this building which required in addition to the beams mentioned, 503 Raymond concrete piles, driven to a depth of 25 feet, in piers of eight and ten. Each pier was capped with four feet of reinforced concrete and approximately 700 cubic yards of concrete was used in the footings. The work on this contract was started October 12 and completed December 5.

The floors of this building were designed to carry a live load of 350 pounds per square foot on the first and second floors and 250 pounds on the third, fourth and fifth floors.

Pay Freights Under Protest.

Announcement was made at Chicago, January 8, that the Illinois Manufacturers' Association had decided to delay prosecuting its complaint in the Mississippi-Missouri river rate cases pending a decision in the United States Supreme Court on propositions having a direct bearing. The order of the Interstate Commerce Commission in the case was effective December 30, and it is regarded as probable that members of the association will be advised to make payments under protest on shipments affected until final adjudication is obtained.

The commission changed the basis of rates between Mississippi and Missouri river points so as to place shippers and industries in Illinois at a disadvantage of 5 cents per 100 pounds first class, 4 cents second class, 3 cents third class, 3 cents fourth class and 2 cents fifth class on all shipments to Missouri river points and points thereon taking the same rate.

The same disadvantage, it is alleged, also applies on all shipments made in competition with shippers in Central Freight Association territory east of the Illinois-Indiana State line and west of Wheeling, Pittsburgh and Buffalo.

Electrical Engineers at Panama.

About 200 members of the American Institute of Electrical Engineers will arrive on the Isthmus of Panama, one ship from New York and one from New Orleans ,on Thursday, January 26. The visit will last one week.

Oil at $25,000 a Barrel.

[From the Oil City Derrick.]

Franklin, Pa., enjoys the distinction of having a company manufacturing the highest grade lubricant in the world. The concern is the Fulcrum Oil Company, and the lubricant is a chronometer oil used for lubricating Swiss watches and American watches of the smaller sizes. It is put up in one-eighth ounce bottles, and at the bottle rate to dealers the oil is worth $25,000 a barrel. The same concern makes a watch and clock oil that, at the bottle rate, is worth $6,000 a barrel.

The company was organized three years ago to manufacture watch and clock oil, and after many experiments the men behind the scheme found that they had an article that could not be surpassed, if indeed it could be equaled. In one month they spent $5,000 for advertising purposes, and to-day the oil is used in every civilized country on the globe. It has been adopted by all the large watch manufacturing concerns, and one street clock manufacturer will not guarantee its clocks to run in extremely cold weather unless Fulcrum oil is used in them.

Recently the company took up the manfacturing of superior automobile oils and greases, and already it has induced many large makers of cars to use its product. This branch of the industry is expected to develop enormously.

The company has just received its charter from Harrisburg. A week or so ago it moved into its new three-story factory along French creek, in the Third ward. The stock is all held by a small group of men.

TRACTION AND "L" INTERESTS ARE HEAVY BUYERS OF ROLLING STOCK EQUIPMENT.

ELECTRICAL MANUFACTURERS ARE AFFECTED BY THE MONTH'S PURCHASES — NEWS OF THE RAILROADS AND RAILROAD BUILDERS.

Heavy buying of traction and elevated railroad rolling stock has insured much high-class output to the car builders for the spring, and also has piled up orders for electrical equipment with the street railway motive power concerns.

The heaviest order of this class last week was from the Philadelphia Rapid Transit Company for 500 modern side and front-entrance cars. The cars were ordered of the J. G. Brill Company, Philadelphia, and the motors will be turned out by the Westinghouse works.

The International Railways Company, Buffalo, has placed an order for 100 large type cars; the Reading (Pa.) Transit Company, and the Portland, Gray & Lewiston Railroad, operating in Maine, have also placed large demands for equipment, for all of which Westinghouse motors are specified.

The Boston Elevated is considering an order for new rolling stock, in addition to that placed last November.

A Chesapeake & Ohio Feeder.

Officials of the Chesapeake & Ohio Railroad last week announced that the C. & O. is planning to build a 25-mile extension from Harold, Ky., on the Ashland division, up Beaver creek to the coal lands owned by the Consolidation, the Beaver Creek and the Northern Coal Companies.

Coal from these mines will be sent through Ashland to Cincinnati, where it will be turned over to the C., H. & D. for the haul to Toledo, from which point it will be handled in the Great Lakes coal traffic during the summer months, while in the winter it will be diverted for an all-rail haul to the Northwest.

Official Organ for Railway Commission.

The National Association of Railway Commissioners—the country wide organization of State railroad, public service, utility and Interstate commerce commissioners—is to have an official organ which will carry monthly a resume of rulings, regulations and decisions of the State and Federal transportation regulatory bodies. These data, which will be furnished direct by the various commissions, will cover, not only the activities of the governmental supervisory bodies with respect to traffic, rates and service, but will also include an official account of orders along other lines, such as safety appliances, rules and general operating regulations. Such a publication has been advocated for several years, and the commissioners, at their 1911 meeting, definitely decided on the issue. The work of preparation and publication is intrusted to the Traffic Service Bureau of Washington and Chicago. The commissioners' journal will be known as "Public Service Regulation." The first number appears the present week.

Hold Up Cincinnati Depot Plans.

At the conclusion of a conference at Cincinnati, on January 9, executives of nine railroads referred the project to build a new $40,000,000 union depot in Cincinnati back to the railroad civil engineers for further report. The officials at the conclusion of the meeting refused to make any statement. All inquiries were referred to Vice President Thomas C. Powell, of the Queen & Crescent Road, who gave out this statement:

"A meeting was held at the Sinton hotel, at which A. S. White, John E. Bleekman, and the executives of the several Cincinnati railroads were present. Owing to the changes made in the original plans, as embodied in the ordinance passed by the council and as explained to the executives by Mr. Bleekman, it became necessary to submit these revised plans to the committee of railroad engineers to make a new estimate of cost. This committee of engineers will, as before, report to the committee of executive officers."

Those present at the Cincinnati meeting, representing the railroads were: President Milton H. Smith and Chief Engineer W. H. Courtney, L. & N., Louisville; Vice President N. D. Maher and Chief Engineer C. S. Churchill, Norfolk & Western, Roanoke, Va.; President George W. Stevens, Vice President Decatur Axtell, of Richmond, Va., General Superintendent J. Paul Stevens, Kentucky Central and Chicago divisions, Covington, and Assistant Engineer J. A. Lilly, of the Chesapeake & Ohio; Vice President C. E. Schaff, Chicago, General Manager John Q. Van Winkle and Chief Engineer George P. Smith, Cincinnati, Big Four; Second Vive President J. J. Turner and Chief Engineer Thomas Rodd, Pittsburgh, and Superintendent R. C. Barnard, Cincinnati, Pennsylvania Lines; General Manager William C. Loree, Cincinnati, Hamilton & Dayton, Cincinnati; Chief Engineer F. L. Stuart, Baltimore, and General Superintendent C. W. Galloway, Cincinnati, Baltimore and Ohio Southwestern, and Vice President T. C. Powell, Cincinnati, Assistant to the President H. B. Spencer, Washington, D. C., and Chief Engineer Curtis Dougherty ,Cincinnati, Queen & Crescent Route.

PRINCIPAL STEEL CAR ORDERS OF THE WEEK.

Pennsylvania. — 7,000 coal, coke and gondola cars. including 1,000 of new type, 2,200 to Cambria Steel, 1,000 to Pressed Steel Car, 2,000 to American Car & Foundry and 1,800 to Standard Steel Car.

Philadelphia Rapid Transit.—500 latest type front entrance steel cars, J. G. Brill Company.

Elgin, Joliet & Eastern.—500 steel underframe freight cars, Pullman Company.

Lackawanna. — 200 refrigerator cars, Standard Steel Car Company.

Missouri Pacific.—500 steel underframe cars, with box tops, Pressed Steel Car Company.

Mr. Edison and Chicago Electrification.

Thomas A. Edison, who has been looking Chicago over, is quoted as having said that it will be a very simple operation for the various lines entering the city to supersede steam with electricity. This is one extreme in the difference of opinion on this question, comments the New York "Times." Various railway officials of more or less importance have said that it will be absolutely impossible to finance the project of electrifying all the terminals. That is the other extreme. Engineers called in by some of the roads and the city jointly have said that the problem can probably be worked out to the satisfaction of everybody, if it is gone about in the right way. No one questions that the roads must eventually give up the use of coal within the city limits, but there is no immediate need for the change, and Chicago has shown a disposition to be entirely fair to the carriers without yielding her municipal rights. Mr. Edison, the "Times" believes, has in mind a certain wonderful storage battery when he minimizes the difficulties of electrification.

To Remove Erie Railroad Terminals.

A force of several hundred men was put to work at Marion, O., last week by the Erie Railroad, enlarging the roundhouse and the yards preparatory to the removal to Marion of the Galion (O.) terminal. Altogether nearly 100 trainmen will make their homes either in Marion, Kent or Dayton after January 10, the new order compelling their removal from Galion.

The work of double-tracking the Chi-

cago division is to commence with the opening of March. General Superintendent H. O. Dunkle, is quoted as saying:

"We are putting on 35 big modern locomotives, weighing 360,000 pounds each, and capable of hauling 33 per cent heavier loads. With these locomotives the freight runs will be shortened. They will not only expedite the service, but vastly reduce expenses. We will avoid overtime on the part of road men; more easily comply with the limitation of hours of service, and reduce car rentals enormously.

"The completion of the double-track construction will mark the beginning of a new era for the Erie. The road has expended needless thousands in the old plan of operation with the terminals at Galion; and Marion has been made the terminal point for the Kent and Dayton divisions, as it is already the terminal point for the Chicago division."

Car Brake Tests in New York.

An order of the New York Public Service Commission requiring the installation of power brakes on all trolley cars in Greater New York weighing more than 25,100 pounds came up last week in court on a rehearing applied for by the Brooklyn Rapid Transit Company. George L. Fowler, consulting engineer, in charge of experiments under way in the last three weeks, said tests were made with various types of cars, empty, with a moderate load and with a load equal to the weight when crowded to the limit. The cars were run at five, ten, fifteen and twenty miles an hour, with the rails wet, dry and slippery. Engineer Fowler said he would need almost three weeks more to finish the work. Experiments thus far made were not as convincing as they might have been if the manufacturers of power brakes had been represented and that it was entirely possible that hand brakes might work better when operated by picked motormen than when handled by the ordinary, everyday motormen. Manufacturers of power brakes were notified they would be given two weeks more to submit to the tests.

Cast Iron Pipe Contract.

Youngstown (O.) Board of Control last week awarded the contract for 750 tons of cast iron water pipe to the United States Cast Iron Pipe & Foundry Company. The price was $27.85 per ton, as against $21.70 per ton last year.

Missouri Pacific Car Deliveries.

The Missouri Pacific will have car deliveries as follows: January, 2,000; February, 500; March, 1,500, and April, 400.

TRADES UNION DISCHARGES.

Cincinnati Court Hands Down Important Decision in Labor Case.

In the Common Pleas Court of Hamilton county, O., at Cincinnati, on January 9, Judge Gorman handed down a decision which has been awaited with some interest in industrial circles at Cincinnati. The decision holds constitutional Section 12,943 of the General Code of Ohio, which makes it a misdemeanor for any officer or employe of a company, corporation or person, to prevent employes from joining, forming or belonging to a lawful labor union, or to attempt to coerce them by discharging or threatening to discharge them from their position, because of their connection with such labor unions.

The decision was in the case of Saul Berger, an employe of the Roth Shoe Company, of Cincinnati, and William Skahn, an employe of the MacDonald & Kiley Company (also shoe manufacturers), who were arrested on warrants sworn out by men who claimed that they had been discharged because they belong to the Shoe Workers' Union. The arrests grew out of the strike of the shoe workers at Cincinnati, and followed injunction suits that were filed by the shoe manufacturers against the striking workmen.

The shoe manufacturers, fighting the case for their arrested employes, secured writs for their release, and at the hearing pleaded that the State law is unconstitutional as it is in contravention of the fifth and fourth amendments to the United States Constitution, and of Section 1, Article 1, and Section 26, Article 2, of the constitution of the State of Ohio, and it was to these points that the case was argued.

The validity of this Ohio law has never been passed upon by the Supreme Court of Ohio or by any of the Circuit Courts in the State, but there are two Common Pleas decisions, which, however, are diametrically opposed. One decision was by Judge John R. Sayler, when on the Common Pleas bench at Cincinnati, who, in the case of Davis vs. State, held the law constitutional. Judge H. D. Peck represented Davis, claiming the validity of the law, and former Senator Joseph B. Foraker, the contrary. The case was taken to the Circuit Court on error, but Davis failed to appear and the case was dismissed. Later, Judge Pugsley, of the Lucas County Common Pleas Court (Toledo), in the case of the State against Bateman, decided that the law was unconstitutional.

In deciding the law constitutional, Judge Gorman, in last week's Cincinnati decision, holds that the State may enact a law to protect such associations against "improper and illegal attacks." In part the court says:

"This law, as I interpret it, is to protect the union, a lawful organization, and a threat or coercion against a member of the union to compel him to withdraw therefrom may be made unlawful, just as threats, intimidations and coercions against church members to do them harm if they do not withdraw from their church may be made a misdemeanor or a crime. It is contrary to public policy to permit any one to be forced, coerced or intimidated by another to do or not do a thing.

"If the employer discharges the laborer, or threatens to discharge him from his employ, not for the purpose of benefitting himself or his business, but with the sole intent or motive of coercing or intimidating the employe into withdrawing from his labor organization, is he not acting from bad and malicious motive, with intent to injure the labor organization by breaking it up?

"Upon full consideration of the law, its purposes and the good that may be accomplished by it, without apparently doing harm or injustice to the employer, I am of the opinion that this legislation is a valid exercise of the police power by the legislature. If it were a doubtful question, and at best it appears to be so, it would be my duty to sustain the law as a constitutional enactment. Unless the law is clearly, palpably in conflict with the constitution, so that there is no doubt or hesitancy in the mind of the court, it should be declared constitutional. If there be any doubt as to its validity that doubt must be resolved in favor of its constitutionality."

As to the discharge of union men the court says that they could be discharged for any other cause or no cause, but to make a cause of the fact that they belong to unions is coercion. With the conclusion of his opinion Judge Gorman remanded the men to the custody of Constable Tiernan, but released them on their own reconizance pending the taking of the case to the upper courts. More arrests along the same line are now promised by the shoe workers. The case may go to the United States Supreme court before being finally determined.

Structural Awards in the West.

The Kansas City Structural Steel Company has recently taken orders for 5,600 tons of structural work from the Calumet & Arizona Mining Company, and 3,500 tons from the Arizona Copper Company. The Burlington Railway has ordered 1,200 tons of material from the American Bridge Company.

ELECTRICAL EQUIPMENT FOR McCALLS FERRY.

HEAVY GENERATORS ORDERED FROM WESTINGHOUSE INTERESTS—TRANSFORMERS JUST PLACED AT BALTIMORE SUB-STATION OF POWER COMPANY ATTRACT MUCH ATTENTION.

HYDRO-ELECTRIC and transmission line designers throughout the East have been following with interest the development of the McCall's Ferry (Pa.) power project, on the Susquehanna river, which is supplying the city of Baltimore with power. A week ago the Pennsylvania Water Power Company, which has installed the plant at McCall's Ferry, placed with the Westinghouse interests an order for one of the largest waterwheel generators ever constructed. The machine will have 15,000 horsepower capacity and will develop an alternating current of 11,000 volts. Westinghouse equipment is used exclusively at the McCall's Ferry plant.

Detailed descriptions have been authorized of the new features of the Baltimore sub-station of the company. Fig. 1, in the accompanying illustrations, shows one of the transformers at the Baltimore sub-station. The power plant will have on ultimate capacity estimated at 100,000 kilowatts. The Baltimore sub-station is 40 miles distant from McCall's Ferry.

The Baltimore Station.

Fig. 2 shows the exterior of the Baltimore sub-station, at present equipped for 40,000 kilowatts with space provided for additional transforming and switching apparatus. This equipment consists of four 10,000 K. V. A. three-phase transformers of the Westinghouse type, which are said to be the largest transformers ever built. They are of the water-cooled type, and are used to step-down the 25-cycle current from 70,000 volts to 13,200 volts for distribution.

The enclosing tank is elliptical, having an over-all length of 15 feet 11 inches, and an over-all width of 8 feet 8 inches. The height to the top of the terminal is over 16 feet, and the joint between case and cover is 11½ feet from the floor. The total weight of each transformer complete, with oil, is about 145,000 pounds, or nearly 75 tons.

These shell type transformers are water-cooled. The cooling water is visible at its exit, so that any stoppage or inequality of flow in the parallel cooling coils can be detected easily. The tanks are of boiler iron with welded seams, and crowned cover and bottom.

The terminal bushings are of the condenser type, designed to withstand a test of 180,000 volts each for one minute. These bushings are made up of alternate layers of insulating arc conducting material which by producing a uniform distribution of dielectric stress in the insulation enable the use of a much smaller bushing.

Difficulties of Installation.

In installing these transformers, on account of railroad clearances and the great weight of each unit, the core and coils, the tank cover, base and details, and the oil were shipped separately. At the Baltimore sub-station a railroad siding runs directly into the station. Paralleling the siding in the station are the transformer compartments, built of concrete. When the transformers were received at the sub-station it was necessary to assemble them, one at a time, on a truck running on a track having the same center line as the siding, but of wider gauge.

The moving was done with an electric hoist, and after each transformer was assembled the truck was pushed along its track to the proper compartment, and the transformer rolled in, on its own wheels, the floor of the compartments being at the level of the rails on the truck. The oil was received in tank cars and was pumped into the tanks after the transformers had been thoroughly dried out.

Pressure Control.

There is a pit connected with a 10-inch main for draining the tanks, underneath each transformer for use in

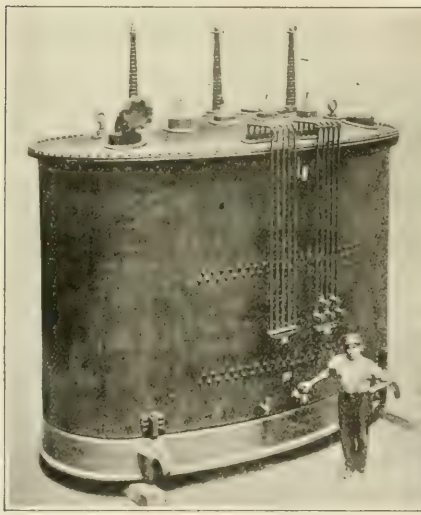


Fig. 1.—Transformer in Baltimore sub-station of McCall's Ferry Company.

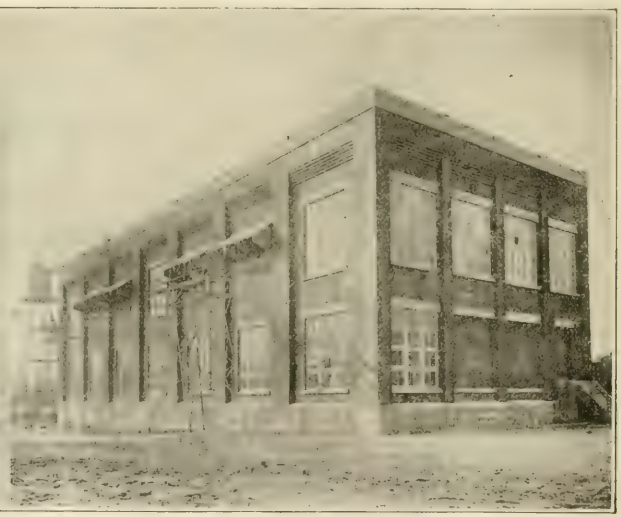


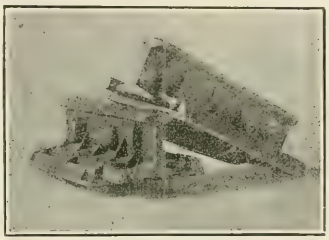
Fig. 2.—Baltimore sub-station, containing the largest transformer in the world.

case of emergency; and the top of each transformer is connected through a back pressure valve to an eight-inch main to relieve any possible rise or pressure in a tank, this arrangement being such that oil blown out of one transformer cannot enter another.

A unique cooling system has been devised, which precludes shut-down from lack of cooling water. The water is obtained from a well near the sub-station, and connection is also made to the city mains for use in case of deficiency of the well, while the large storage tank on a steel tower seen in the photograph of the sub-station is built for use in the case of failure of both sources. With this emergency system there is provided a spray cooling system, which makes it possible to re-use the cooling water, the storage tank supplying only the deficiency caused by leakage and evaporation, but normally the heated water is discharged into the nearby stream.

IMPROVED RAIL JOINT ENDORSED BY RAIL MEN.

PITTSBURGH rail men recently have examined an improved rail joint which H. J. Bubenheim, master mechanic for the Sweet Steel Company, Williamsport, Pa., is arranging to place on the market. This joint, after five years' practical test under severe conditions, is claimed to have demonstrated to the satisfaction of the different parties trying it out, that it is an improvement, is thoroughly practical and offers to the railroad world a joint that possesses a double safety feature and has shown a minimum cost for maintenance and repairs.



Rail joint, invented by H. J. Bubenheim, Williamsport, Pa.

The joint, as the illustration shows, consists of five parts, two double tapered keys, two fish plates, and one rail chair. The entire joint, when assembled, weighs 100 pounds, exclusive of bolts, which are optional, but at the same time offer one of the safety features. The keys, the smallest part of the joint, weigh four pounds each. They are 24 inches long, are made of rolled steel and used in the rough. The angle bars are of special design and are made of cast or rolled steel. The lugs on the angle bars engage the rail chair in such a way that longitudinal motion is eliminated and a special feature is here offered in that the rail chair being spiked to the ties and the angle bars clamped to the chair, the entire joint acts as an anti-creeper.

The rail chair is made from cast or rolled steel. It is 12 inches wide and 24 inches long. It is also a special feature in that it acts as a rail brace. The chair is made either of the suspended or the supported type.

The improved rail joint was developed to incorporate a practical economical and double safety joint carrying with it the anti-creeping and rail brace features.

If for any reason any two parts of the rail joint break the safety features are not destroyed, since the two rails are clamped firmly in the chair and are held in alignment. If the chair should crack it is impossible for it to get out of its normal position and the keys and angle bars continue the perfect alignment of the rails.

Five years' wear and strains on the railroads are claimed to have demonstrated the longevity, practicability, low cost of maintenance and safety features of the device, and its advocates say present conditions of heavy tonnage and high speed make such an appliance a necessity for the safety of the traveling public and for the railroads.

Sues on Alleged Stolen Plans.

The Broderick & Bascom Rope Company, of St. Louis, has filed injunction proceedings in Seattle, Wash., against the S. B. Hicks Wire Rope Company of that city, claiming the Hicks Company intends to install machinery in its Seattle plant on which the St. Louis company has the exclusive patents, blue prints of which were stolen, it is alleged in the petition by two former employes of the St. Louis company, who went to work for the Seattle firm. The blue prints were of special machinery, which, it is claimed, the Hicks company, which is not an agency of the Broderick & Bascom Company, is attempting to install in its factory.

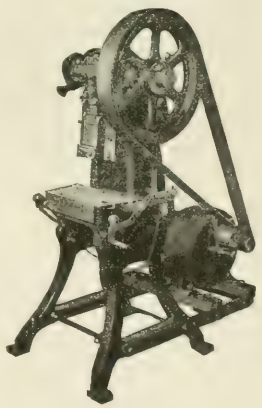
Joseph D. Bascom, secretary of the Broderick & Bascom Rope Company, in an authorized statement, alleges that the men left the St. Louis Company in June of last year, and it was after their departure that the discovery of the loss of the blue prints was made, and that the employes betrayed the trade secrets to the rival company. The St. Louis company asks $200,000 damages from the S. B. Hicks Wire Rope Company.

SAFETY DEVICE FOR STAMPING PRESSES.

The Benjamin safety device for stamping presses is intended to protect the hands of the operator of stamping presses, by necessitating the removal of both hands from the point of danger to trip the press before the ram starts in its downward direction. The release of either hand permits the trip to return to its normal position, thus making it impossible for the press to repeat unless both hands are kept on the levers until the repeat operation is begun, in which event the operator would not have time to get his hands back into danger before the operation is completed.

The device consists of an operating lever normally inoperative, although free to move downward. This lever is made operative by the action of an electric retaining magnet through a circuit closer located on the opposite side of the press. Consequently the press cannot be tripped by the operating lever unless the circuit through the magnet is first closed and retained closed until after the press has been tripped.

In addition to the protective feature, the use of the device results in an increased output of work where it is necessary to bring the hand into a position of danger for handling individual pieces The operator knows the press cannot trip



until both hands are removed. The increased confidence thus created materially increases the number of operations actually performed, with a corresponding increase in the amount of work done.

This safety device, it is asserted can easily be adapted to all the standard presses. No drilling of holes is necessary. The magnets are wound for 110 volt direct current, but can be used on 220 volt direct circuits by use of suitable

resistance in series, or be equipped with A. C. circuits.

The Benjamin Electric Manufacturing Company, 120-128 S. Sangamon street, Chicago, Owns the rights on the device.

CUSTOMS DECISIONS

Leather Belting.

The Board of United States General Appraisers last week reversed an assessment made by the customs authorities at Boston on belting leather. The merchandise was returned for duty at the rate of 15 per cent ad valorem under the provisions of Paragraph 451 of the act of 1909. It was claimed that duty should have been levied at only 5 per cent under the first provision of the same paragraph, or in the alternative at 7½ per cent under Paragraph 450. Judge McClelland holds that the claim for 5 per cent duty is correct, and so orders.

Metal Wire Not "Glass."

In sustaining a protest filed by New York importers, the Board of General Appraisers decided that the metal wire in incandescent electric light bulbs is of more value than the glass entering into their manufacture. The collector had exacted duty at 60 per cent for "blown glass." The importers maintained that the duty should be 45 per cent under the metal schedule.

Bituminous Coal, Screened.

New York traffic agents succeeded in securing a reversal of the assessment made on bituminous coal which would pass through a half-inch screen. The importers made no objection to the levy of duty of the lump coal at 67 cents a ton, but claimed a rate of 15 cents a ton on the finer coal.

New Steel River Packet.

Henry Leyhe, general manager of the Eagle Packet Company, of St. Louis, following its annual meeting, last week announced a new steel-hulled packet costing $100,000 would be built at once to be used in the St. Louis and Cape Girardeau trade.

This will make the seventh boat operated on the Mississippi by the Eagle Packet Company. Contract for the construction of the new boat will be let some time next week. The steamer will be 240 feet long and 40 feet wide; engines, 22 inches in diameter, with an 8-foot stroke, and 4 boilers, 44 inches in diameter and 26 fet long. The construction will be mostly of steel, with an all-steel hull.

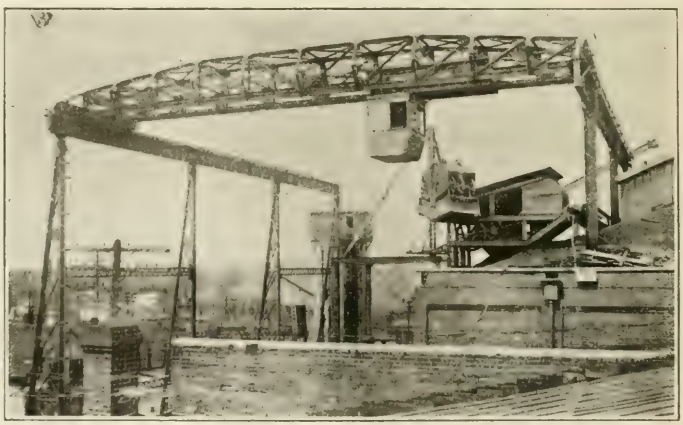
West Virginia Retail Hardware Men's Association holds annual meeting at Huntington, February 12-14.

UNIQUE ELECTRIC STATION COAL HANDLING PLANT.

By Frank C. Perkins.

THE accompanying illustration shows a novel and efficient coal handling plant at the electric station at Muncie, Ind., where there is installed a very complete system for conveying the coal from the railroad cars to the stokers and the ashes from the furnaces.

The railroad cars containing coal are run into the yard under a 70-foot span open grinder type crane operated on an elevated track approximately 70-feet from the top of the crane rail to the ground. This crane is equipped with a man trolley from which is suspended a grab bucket which has a capacity of 54 cubic feet or about 1½ tons, actuated at a speed of 250 feet per minute. The illustration shows the bucket alongside the crusher. By means of this machinery the coal is delivered from the cars at the rate of about 60 tons per hour either to the ground storage or to a traveling crusher located upon the roof of the boiler house, where it is crushed and delivered into the overhead bunkers in the boiler house, to be delivered to the fireman.



Electric coal handling installation at Muncie (Ind.) power plant.

The bucket is of the four-rope type, two ropes opening, and the other two ropes are for closing and lowering. This bucket is of the bull-wheel type, being closed by means of flat closing chains and the path of the scoops or spades is obtained by means of a lever system, which prevents the interference of the back of the scoop with the material.

The Operating Mechanism.

The Jeffrey operating mechanism for the bucket in the man trolley is arranged so that the bucket is hung directly from three drums, the two hold ropes being fastened to the center drum and the two closing ropes to the two outside drums. The closing drums are geared direct to one 50 horsepower series wound crane type motor and the hold drum is geared to another motor of the same type and size, thus giving two motors entirely independent of each other for the manipulation of the bucket. These two motors are fitted with solenoid brakes and are controlled by means of a magnetic switch control panel operated by one master controller.

This controller also operates the solenoid brakes on the motor and is arranged to give the necessary operations of the bucket. In the beginning there is one point of power on the closing motor with the brake released on hold motor, to allow the bucket to sink into the coal while closing; while the next four points of power (with both brakes released) hoist the loaded bucket, the two motors equalizing under the strain of the loaded bucket.

Following this there is one off-position with both brakes set, for holding the loaded bucket while traveling the crane or trolley, then one kickoff point with the hold-brake set for dumping the bucket, after which there are four points of dynamic brake for lowering the empty bucket.

Ease of Operation Claimed.

As all the operations of the bucket are entirely controlled from one master controller, the operator has only three controller handles to manipulate when operating the crane—the bucket controller handle, the trolley controller handle

and the bridge controller handle.

It is held that the weight of the mantrolley complete with loaded bucket is approximately 25,000 pounds, and is actuated along the bridge by a 10-horsepower, series-wound, crane motor. The bridge or crane has a clear span between centers of rails of 70 feet, and weighs approximately 25,000 pounds. This bridge is actuated in either direction at a speed of 300 feet per minute, with a solenoid brake for bringing the crane to rest, also for holding same against weather conditions.

The bridge and trolley controllers are fitted with a special point on either side of the off-position, which cuts the power off the motor without releasing the solenoid brakes, allowing the crane to drift before bringing them to rest. For reducing the run-of-mine coal, for use in the stokers, a single roll type of crusher is used. This crusher is mounted on a steel frame work placed on four 12-inch double-flanged truck wheels, which operate on a track placed the full length of the boiler house.

The Crusher Mechanism.

As seen in the photograph, this crusher is equipped with a receiving hopper of approximately 12 feet square, and of such a size as to hold about three bucket loads of coal. This crusher is run by a 20-horsepower, shunt-wound motor connected to the crusher by means of a belt drive. This crusher delivers the coal through openings in the roof to the overhead bunkers in the boiler house, and is moved along the track by placing the grab bucket alongside of the hopper and moving the traveling crane in the direction where the coal is to be discharged.

The electric station at Muncie, Indiana, has a capacity of approximately 3,200 boiler horsepower, and is equipped with eight Sterling rollers of approximately 400 horsepower each, which are fitted with chain grate stokers. The capacity of the overhead bunkers is approximately 500 tons of coal.

For handling the ashes, there are underneath the grate two hoppers. The one under the forward end is the reclaiming hopper, which is used to catch the unburned coal which falls through the grate and which is fed again to the stokers. The ashes are dumped over the rear end of the grate into the ash hopper, where the contents are discharged into small dump cars which carry them out of the building through an underground passage to a concrete ash hopper located in such a position where the ashes can be reclaimed by the bucket and discharged into railroad cars.

New Carnegie library at St. Louis dedicated January 5. Mr. Carnegie contributed $1,000,000.

REMARKABLE AERIAL PHOTOGRAPHIC TOWER.

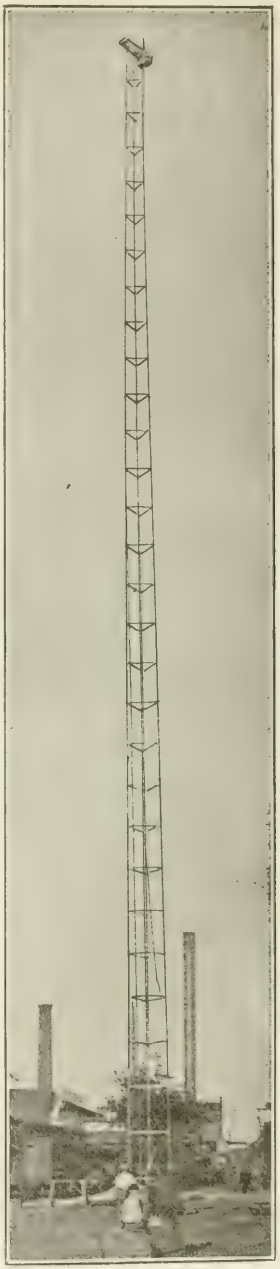
THE first commercial use of a tower and unique aerial photographic apparatus, recently developed at Worcester, Mass., for taking bird's eye-views, is shown in the accompanying illustration. The camera is located at an elevation of 125 feet above the ground.

This aerial photographic apparatus consists of a light tower with an equipment for raising and lowering the camera and holding it in position at the top. The tower is so constructed as to have sufficient rigidity when erected to hold an 11x14 inch camera so as to take a very sharp negative.

It is claimed that the entire outfit is so light that two men operate it with ease, and when taken down the tower sections telescope into such small space that the whole can be conveniently shipped by express.

In operating this apparatus the focus and field of the camera are determined mathematically. When the tower is in position the camera is drawn up over pulleys and locks into position on the holder. Electricity is employed to operate the shutter. Experiments are being made on the installation of a "range finder" at the bottom of the tower.

It is said that this device has been employed during the past season with much success.



Tower photographic apparatus.

Stanley Committee Extravagance.

[Washington Cor., N. Y. Tribune.]

With characteristic recklessness the Democratic majority in the House appropriated another $9,000 to-day for the use of the Stanley committee, which is investigating the steel trust, and this despite the fact brought out that the committee is and has been paying an "expert" $50 a day to investigate the books of the Steel Corporation which it has not yet been able to secure, while another investigator receives $250 a month and $5 a day expenses. The Republicans made a determined effort to compel Chairman Stanley and his colleagues on the committee to admit that they were conducting the investigation merely for the purpose of taking care of certain henchmen at the expense of the federal treasury. This led to sharp tilts and several members lost their tempers. When Mr. Stanley finally obtained his additional $9,000 he looked as if he had earned every cent of it. At the present rate of expenditure this will not last long, and there is reason to believe that when the committee comes back for more it will be met with almost insurmountable obstacles, having already expended $34,000 on an investigation which has revealed nothing and has served only to care generously for certain lean and hungry Democrats.

APPLICATION OF FLUORESCENCE IN TESTING OILS FOR INDUSTRIAL PURPOSES.*

By Alexander E. Outerbridge, Jr.

Metallurgist, William Sellers & Company, Inc., Philadelphia, Professor of Metallurgy and President of the Metallurgical Section of the Franklin Institute.

IT HAS been my custom, since my appointment to the chair of metallurgy of this institute, to open the annual session of this section with an address on some topic allied to the art. I hope to be able to show that in speaking to you on the testing of oils I am not, as would appear, diverting from that custom, my subject having a close connection with the metallurgical art as practiced in the industrial foundry.

Those of you to whom the process of casting metals is familiar know that in the operation of molding considerable attention has to be given to the production of the "core"—that part of the mold which forms the hollow portions of the casting. In cylinders for internal combustion engines, or in locomotive injectors, etc., the interior of the casting is by far the more important part, and the accuracy of reproduction of this from the mold depends, of course, mainly on the excellence of the cores used. In view of the significance of the factor, core-making is, and has always been, regarded as a distinct and separate branch of the art of molding.

Development of the Oil Core.

Cores were formerly all made by "ramming" a mixture of sand and such adhesive materials as clay, flour, molasses-water, or other constituents into a "core-box" of suitable configuration, thereby producing a compacted mass that could be removed from the box without injury. The "green" core, as this was termed, was transferred to an oven, where it was slowly baked until hard. In this condition it was ready for insertion in the mold.

This method of core-making is still in universal use for large work, though for smaller cores a radically different process has come into vogue. A kind of quicksand is prepared by intimately mixing, in a suitable machine, beach or bar sand (called by molders "sharp-sand") and some vegetable oil (preferably linseed oil) in the proportion of from 30 to 100 parts of sand to one part of oil. The mixture, being mobile, is poured into the core-box to well fill the latter, and the excess is simply scraped off with a straight edge drawn across the top of the box. Provision is made for taking apart the latter and leaving the fragile core on an iron plate on which it can be transported to the core-oven without injury.

The oil-cores so produced are not only far cheaper than "rammed" cores—they are made by unskilled labor in a fraction of the time taken to make rammed cores by skilled labor—but are, moreover, extraordinarily tough when baked, and are impervious to moisture. They require no "venting," as but little tendency to form gas in manifested on pouring the metal.

In consequence of these advantages, the adoption of this method of making cores has during recent years notably increased, so that, at the present time, large sums are being spent annually by industrial concerns in the purchase of oil for their production.

Search for Cheap Core-Oils.

It was already stated that the best binder for making oil-sand cores was linseed oil. In the last few years the price of this has risen from 50 cents to $1 per gallon. "Soya" oil pressed from beans grown in enormous quantities in China has been found an excellent substitute. The cost of this is about 60 cents a gallon for fine grades. The very best substitute for linseed oil is, however, said to be crude whale oil, which costs about the same as "Soya" oil, although its use is objected to on account of the unpleasant odor emanating from the core-ovens during the operation of baking. Cottonseed oil has been used, but, as a large proportion of oil to sand is required, no economy results.

The high cost of the fine grades of these vegetable oils has brought about the introduction of so-called "core-oils." These usually consist of linseed oil as a base and mineral or resin oil, or both. Experience has shown that the presence of the latter "non-drying" oils materially affects the cores, renders them brittle and subject to rapid deterioration, and is, therefore, undesirable. Hitherto, however, no method except the costly one of chemical analysis, usually impracticable in industrial plants, has been available for detecting their presence and amount in oils supplied.

The method about to be described to you was some months ago tried out and put into practice at the works with which I am connected. I also had the honor of demonstrating it before the American Society for Testing Materials* last June at Atlantic City.

The Fluorescence Tests.

The basis of the method is that hydrocarbon oils (incorrectly termed "mineral") and resin, exhibit, under the rays of reflected light, the phenomena known as fluorescence and termed in this connection "bloom," while vegetable oils exhibit no such fluorescence or "bloom." All these oils appear of their natural color in transmitted light.

In both mineral and resin oils the degree or intensity of bloom depends on the degree of refinement of the oil, and is generally in proportion to its natural color. Mineral oil exhibits, however, green fluorescence, while that exhibited by resin oil is blue.

Fluorescence is the property inherent in certain substances of becoming self-luminous on exposure to "ultra-violet" or "actinic" rays of light. Such rays are present to some extent in daylight, and under this the phenomenon can be observed to a certain degree.

As the result of investigation using the various forms of electric light, such as that given by carbon or tungsten filament lamps, by Cooper-Hewitt mercury vapor tubes, by ordinary and flaming arcs and by enclosed arcs, it was found that the intensity of bloom in bloom oils was particularly increased under the rays of the latter. The utilization of this observation in the practical detection of adulteration and quantity of adulteration in vegetable oils forms the subject matter of this paper.

Simplicity a Recommendation.

When it is remembered that the method of chemical analysis for the detection of a small quantity of impurity is very costly, that the method of studying fluorescence by means of quartz prisms and lenses mounted in spectroscope has the same disadvantage, and that, moreover, skilled manipulation by highly-trained observers is essential to both, the significance of the simple method under consideration becomes at once apparent.

That the method is efficient so far as discrimination between nature of oils is concerned is shown by the fact that under the rays of the enclosed arc neither linseed oil, "Soya" oil, corn oil, cottonseed oil, China bean oil, China wood oil, nor, in fact, any of the vegetable oils, shows the slightest trace of fluorescence. On the other hand, all mineral resin oils, except the very volatile products of petroleum, such as gasoline and petroleum ether, show marked bloom, as also do samples of so-called

* Abstract of address at meeting of Metallurgical Section, Franklin Institute, October 26, 1911. Published in Journal of the Franklin Institute, December, 1911.

* Proceedings of the Society, vol. xi, 1911.

No. 1 and No. 2 lard oils, while pure white strained lard oil is seen to be free from bloom. This latter introduces the question of oleic acid in lard oil, said to be in itself fluorescent, and the method may furnish a novel means of determining the amount of such acid present.

The slight fluorescence of lard oil differs in appearance from that of mineral or resin oil, hence adulteration of lard oil by either of the latter may be detected by the method.

Detection of Adulteration.

Processes of chemical treatment are supposed to have been discovered to "de-bloom" mineral and resin oils, thus facilitating their use as adulterants of the more expensive vegetable oils. There is at the present time a large trade in such oils.

Samples of de-bloomed oils of various grades and colors were obtained. Such exhibited no fluorescence in bright sunlight or in the light from the ordinary arc. On exposure to the rays from the enclosed arc they are, however, seen to possess distinct bloom.

A metal-cutting compound now being sold as "mineral lard oil"—its name indicates its composition—shows strong fluorescence. Under the enclosed arc kerosene is seen to become a beautiful blue color. Cheap fuel from the storage tank becomes quite opaque and entirely self-luminous. Resin oils of different grades and resin oil mixed with turpentine exhibit the phenomena.

Pure linseed oil costing $1.10 a gallon, and Pennsylvania fuel oil costing 5 cents a gallon, diluted with a small quantity of kerosene, are seen to be indistinguishable under transmitted light, while under the arc the contrast between them becomes very forcible.

The demonstrations shows that no misstatement is made in saying that any kind of mineral or resin oil can be distinguished from any kind of vegetable or animal oil. Further, if the latter oils be adulterated with the most minute quantity of the former the impurity can at once be detected by the method, and in many cases the nature of the adulterant can be at once stated.

The quantity of adulteration present is determined from the intensity of bloom produced in oils free from bloom; the nature of the impurity from the green or blue color.

Set of Standards Needed.

By preparing a set of standards of pure linseed oil with one-tenth, one, two, three, four, etc., per cent adulteration with mineral or resin oil, in glass test-tubes mounted in a suitable frame against a dark background, a means is provided whereby the proportion of impurity in any adulterated linseed oil can be quickly determined by color comparison on exposure to the enclosed arc. Such standards furnish a "scale of fluorescence" somewhat similar to the well-known carbon color-scale used in steel foundry laboratories for rapidly determining by color comparison the proportion of carbon in an acid solution of steel.

These standards, having linseed oil as a base, may be used for the examination of any adulterated vegetable oil, but for lard oil a special set of standards with pure lard oil as a base must be made up.

A set of standards was prepared with so-called bloomless mineral oil as the adulterant for the purpose of readily detecting the presence and amount of such adulterant in any sample of vegetable oil.

Detection of the presence of a combination of mineral and resin oil adulterants in one sample of vegetable oil is rendered possible by virtue of the color of bloom imparted, although the "quantitative" determination of the amount of adulteration is at first difficult.

In cases, too, where the adulteration of vegetable oils exceeds 10 per cent, it is necessary, in order to correctly estimate the exact amount of it, to dilute the sample with a known quantity of the pure oil, quantitatively determine the adulteration in this diluted oil, and thus in the original sample by calculation. This procedure is necessary from the fact that comparison of color value is impossible when the bloom is of such intensity as to produce apparent opaqueness.

In practice it has been found advisable to prepare standards with fluorescent oils of different grades as adulterants. Crude mineral or resin oils are much darker in natural color than refined oils from them, and the color of the oil by transmitted light is often a guide to the nature of the adulterant employed, and consequently furnishes an indication of the proper set of standards necessary in making the "quantitative analysis" by comparison of fluorescence.

Merely an Aid to Chemistry.

In conclusion, this practical application of fluorescence to the testing of oils for industrial purposes is not, of course, intended to furnish a method to supplant chemical analysis, but merely to afford a means of rapidly ascertaining whether an expensive vegetable or animal oil is or is not free from suspicion of adulteration. At the same time, however, the method is so sensitive in the case of mineral oil adulterants most commonly used as to furnish a correct indication of the amount of adulterant present. The fluorescent tint here exhibited is one so characteristic that after a little practice it cannot be confused with the slight fluorescence of some oils in which no mineral oil is present.

The fluorescent test for kerosene adulterant is, however, not sufficiently sensitive to be of practical value, for the reason that kerosene is not of itself fluorescent enough to tinge other oils to which it is added in small amounts.

In presenting this new method of testing oils without the necessity of chemical knowledge or experience, criticism is invited, for only by such can any faults that may have been overlooked be developed, or any advantageous features that may have escaped observation be brought out. * * * * I, myself, have only ventured to regard it as a substitute for analysts' methods in cases where such slow and tedious processes are not available or practicable in foundries and workshops.

Fire and Business Interests.

In an address before the Pittsburgh Association of Credit Men, President Enoch Rauh made some pertinent statements regarding the mutual responsibility of property owners and laid particular stress upon the fact that while fire insurance will indemnify losers from property loss, it will not provide for the loss of trade and goods which follows the burning out of an establishment. He made a plea for co-operation and to a certain extent, organization, among business men in the same general localities, looking toward the establishment of automatic fire fighting devices within individual stores or buildings, with automatic sprinkler installations in more hazardous establishments.

"There is another thing," said Mr. Rauh, "which such an organization would do as a protection against conflagration, namely: co-operatively or otherwise, erect heavy fire walls, so that a fire starting in one quarter of the town certainly cannot proceed beyond the fire wall, though it may burn all the buildings in the quarter in which it starts. Fire walls over and over again have been found the greatest possible help in stopping the spread of flames."

Plans for Cincinnati Hotel.

Architect G. W. Drach, of the Union Trust building, Cincinnati, has completed plans for the 9- and 12-story addition to be built to the new Gibson Hotel, Walnut street, Cincinnati. The wing facing on Fourth street, is to be 21 feet wide and nine stories high, to consist of entrance to lobby, main dining room and grill room; the main entrance into lobby will be on Walnut street, and the main building will be 12 stories high, to cost $1,250,000.

AWARD FOR TOWING LOCOMOTIVES FOR THE PANAMA CANAL LOCKS.

GENERAL ELECTRIC LOW BIDDER FOR PROVISIONAL AWARD FOR TEST MACHINE—FIVE BIDS RECEIVED BY THE ISTHMIAN COMMISSION — INSTALLATION OF LOCK MACHINERY AT PANAMA—TESTS OF MITER GATE MACHINES AT YOUNGSTOWN.

Award has been authorized to the General Electric Company by the Isthmian Canal board of the contract for one electric locomotive for towing ships through the locks, and a provisional award of 39 other locomotives, if the first one proves satisfactory. Five bids for the 40 machines were received, the highest being $827,395.95, and the lowest $498,016.35, that of the General Electric Company.

The award was made on the regular bid, in which carbon steel was specified, the optional bid being for vanadium steel. The first locomotive is to be delivered on the isthmus within 260 days from the award of the contract.

An article descriptive of the locomotives was published by the INDUSTRIAL WORLD on October 16, 1911 (page 1250). The machine consists of two tractors, between which is carried a truck bearing a windlass. The locomotives move along the lock walls on rack tracks, while towing and by friction, except at inclines, when running light. Power is taken from a third rail. Four of the locomotives will be used on each ship, two in front on either wall of the lock, and two behind. Hawsers from the windlass of each locomotive will hold the ship steady while it is passing through, the forward hawsers towing the ship, and those at the rear towing the two rear locomotives.

Installing Lock Machinery.

The canal staff at Gatun and Colon has arranged for the storage of machinery at those points, pending installation at the locks. In all there will be 30,000 tons of machinery and parts to store over a period of 18 months. When the quantity in storage is greatest it is estimated that 103,000 square feet of space will be required, and the average will be 80,000 square feet. About half the material will be required at Gatun, half at the Pacific locks.

The first of the Stoney gate valve machines to complete test in the United States arrived on the Isthmus before the close of the year and is being erected in the west wall of the upper locks at Gatun. The first of the Stoney gate valves, which will control the flow of water through the main culverts of the locks, will arrive early in February.

One of the cylindrical valves, which control the flow of water from the main culvert of the center wall into the lateral culverts beneath the lock floor, together with the machine for operating it, has been set in the center wall of the upper locks at Gatun. It will control one of the culverts for the west lock.

Test of Gate-Moving Machines.

The first of the miter gate moving machines was tested at the plant of the contractor, the William Tod Company, Youngstown, Ohio, on December 2, and found satisfactory. In accordance with the terms of the provisional award under which two machines were contracted for, the award for 90 additional machines will now be made, the total cost being about $652,000.

The machine in this contract consists essentially of a crank or "bull wheel" to which is fastened one end of a strut or connecting rod, which at the other end is fastened to the lock gate. The bull wheel is mounted in a horizontal position in the lock wall. It has gear teeth on its rim and is driven by a single pinion on a vertical shaft, gear connected with a motor. The wheel, moved through an arc of 197 degrees, closes or opens the gate, according to the direction in which it is turned, the movement being that of a hand reached out to open or close an ordinary gate. Two minutes are required for one complete operation.

Form Signal Accessories Concern.

The Signal Accessories Company, with offices at 140 Nassau street, New York, has been incorporated to manufacture signal materials, and in addition to handle the sales of the United Electric Apparatus Company, Boston; the W. F. Bosser; Manufacturing Company, Utica, N. Y.; the American Conduit Company, East Chicago, Ind., and various other companies. F. C. Lavarack, signal engineer at New York for the Federal Signal Company, Alpany, N. Y., has resigned to become general sales manager of the company.

Line Pipe for California.

The Midway Gas Company, Los Angeles, Cal., is taking estimates on 120 miles of fittings, couplings and appliances for a gas line to Los Angeles.

REVIEWS

ENGINEERS' SOCIETY "PROCEEDINGS." — The December Proceedings of the Engineers' Society of Western Pennsylvania, Pittsburgh, just published, give in full the paper on "Metallic Roofings" by D. M. Buck, of the American Sheet & Tin Plate Company, and the discussion upon it, at the meeting of the Structural Section of the society on November 17, 1911. In addition, there appears a communication from R. B. Woodworth, engineer of the Carnegie Steel Company, treating of the whole subject of metallic roofings from the engineer's standpoint. Mr. Woodworth premises his statement with the remark that there is no roofing which is not adapted to some kind of building, and the problem of the engineer is to select the particular roofing that best adapts itself, cost and maintenance burden considered. Characteristics of different roofing materials are reviewed exhaustively.

SAFETY APPLIANCES.—The January issue of the Journal of Industrial Safety contains articles on "Safeguarding an Electric Welding Machine," "Safeguarding a Planer or Shaper," and "Safeguarding a Foundry Ladle." In the last named paper, a depression in the floor is recommended to receive the crane ladle while it is being filled. This hole allows the catch ladle to be close to the ground and in case of failure of either the ladle or catch ladle the molten metal will fall into the hole. Arrangements are provided for covering the hole when the cupola is not running.

"CHEMICAL AND METALLURGICAL PLANTS" —A new publication by Dr. Oskar Nagel, Ph.D., of New York, well known for his work on "Producer Gas Fired Furnaces," has just appeared from the press (it is published by the author, 50 East Forty-first street, New York). It is on "The Layout, Design and Construction of Chemical and Metallurgical Plants," and contains detailed descriptions and illustrations of actual layouts. There are chapters on Factory Construction, Spelter Plants, Portland Cement Plants, Steel and Iron Plants, By-Product Coking Installations, Machine Peat Factories, Gas Plants, Water Purifying Plants, Paint Mills, Fertilizer Plants, Brick Plants, and a dozen chapters on the cynide and precious metals industries

Names Iron Ore Expert.

The Bureau of Associated Geological Engineers, with headquarters at 131 State street, Boston, and with a branch office at 331 Fourth avenue, Pittsburgh

(at which the chief geologist and several assistants are located), recently has arranged for the services of an iron ore expert—a former member of the United States Geological Survey thoroughly familiar with the ores and conditions throughout the country and a specialist of high rank—and is now prepared to undertake the exploration, examination, mapping, analysis, or the appraisement of iron ores anywhere in the country.

Galvanized Iron Tanks in Trinidad.

According to U. S. Consul F. D. Hale, at Port au Prince, Trinidad, the demand in that island for iron water tanks has been increasing the past year, as they are more and more needed in the country districts, where oil deposits are being exploited, and especially where rain water is the principal source of supply.

"Investigating the matter recently," continues the consul, "I was presented with this problem by a leading importing house of Trinidad:

"The house imported from Bristol, England, some galvanized iron water tanks, 4 feet cube, iron one-eighth inch thick, 12-inch hole in top with hinged cover, brass lock-up tap, 400 gallons capacity; price f. o. b. Liverpool, $24 each, less 5 per cent discount for cash. These tanks received the galvanizing bath after they were constructed, so that inside and outside, rivet heads and all are galvanized, and the entire workmanship seems of extra quality.

This house being engaged exclusively in both importing and exporting, with direct connection with New York, as agents of steamship lines, asked a leading New York exporting house for quotations on a tank identical in every particular with that imported from England, and was given as the lowest price $70 f. o. b. New York, unless a number were purchased, in which case there would be a discount of 7½ per cent.

"This house thinks this condition extraordinary, since American galvanized-iron roofing is imported here to a large extent in competition with that manufactured in England; while New York would certainly have the advantage in freight rates."

The St. Louis Engineers' Club has elected these officers: A. S. Langsdorf, president; John Hunter, first vice president; H. H. Humphrey, second vice president; W. H. Horner, secretary; W. E. Rolfe, treasurer; E. A. Sweetser, librarian. Directors, E. L. Ohle, Hans C. Toensfeldt; members of the board of of managers of the Associated Engineering Society, W. S. Henry, H. A. Wheeler, S. W. Bowen and B. L. Brown.

GAS ENGINE POWER FOR GENERATORS.*

By Howard Dingle.

IN the early days the gas engine was looked upon as a somewhat unsatisfactory form of prime mover, due to the flicker in the lights caused by the irregular impulse in the engine, which was transmitted through the belt to the generator, with corresponding jump in the speed of generator, causing the voltage to flicker, and naturally the lamps on the circuit also. This necessitated the use of a heavy fly-wheel on the engine, and a fly-wheel pulley is still a desirable asset on a small generator driven from a single cylinder gas engine with the hit-and-miss type of regulator, and where the lights are taken directly from the generator rather than from a storage battery. With the improvement that has taken place in the gas engine art, this trouble, it may be truthfully stated, has been entirely eliminated, and the success of these small units is witnessed by the increasing number of plants that are being placed on the market for farm and isolated residential lighting.

Turning to the larger units for both light and power for industrial purposes, the introduction of the multiple cylinder engines was a big step in advance in improving the speed regulation and for successful parallel operation of alternating current generators where the units are of the direct connected type, the multi-cylinder construction is essential for satisfactory results.

Generally speaking, direct current generators are better adapted for gas engine drive where parallel operation is required, and in spite of a certain propaganda for alternating current that has swept over the country, it should not be forgotten that for many reasons, which we will not go into detail, the direct current motor has characteristics that make it preferable for the work contemplated, such as operating cranes, and absolutely necessary for service where a wide range of speed under the direct control of the operator is desired. In other words, direct current is by no means, to use the vernacular of the street, a "dead one."

On the other hand, the alternating current motor has its place, and owing to the simplicity and cheapness of the motor itself it is growing in popularity, but it should be remembered that its use is more properly, although not entirely, limited to constant speed service, such as operating line shafts, looms, etc. Furthermore, alternating current is more easily distributed over large areas, which partly accounts for its use by the central station. The prospective user of electric power must, therefore, take this fact into consideration in deciding on the type of current he will use, and owing to the possibility of using central station power temporarily or side by side with his own plant, or, still further, in the event of being tempted by an attractive rate to buy current—all these reasons sometimes make the installation of an AC plant preferable, even though an analysis of the work to be done might dictate the choice of DC apparatus.

Now, you may be wondering what all this has to do with gas engines. Just this—there was a time when a gas engine could be properly questioned on its ability to drive alternating current generators in parallel. With direct current machines this is comparatively simple. All that is necessary is to be sure the engines will hold up their speed proportionately under load, adjust the voltage of the generators and throw them together. With alternating current there is another limiting condition—the frequency—which, with the commercial standard of 60 cycles, means that there are 60 complete reversals of the current each second—something to be reckoned with. It means that for satisfactory operation in parallel the generators must not only have the same speed regulation, but must keep in step, as it were and here is where the irregular impulse of the gas engine became a serious problem, which, for a long time, was difficult of solution; but I am happy to say, it has been solved through the co-operation of the electrical manufacturers and the gas engine builder. On the part of the gas engine it requires the the multi-cylinder construction, which, with properly proportioned fly-wheel and correct governing mechanism, smooths out the angular fluctuations in the impulse transmitted to the generator shaft. The generator, too, must be so designed that it will tend to pull itself in step, which is accomplished by what are known as dampeners between or in the poles themselves. The action may be likened to two rubber gears meshing with pinions on a common shaft, the elasticity of the rubber tending to bring the generator back in step if there is an irregularity in the driving power.

In conclusion, the operation of generators by gas engine power is in every sense of the word a commercial success, as thousands of plants in operation throughout the country will testify, and the prospective user of gas power should investigate the conditions carefully, and by chosing reliable builders of both the gas and electrical apparatus, ones who have studied and mastered the problem, he can be assured of a satisfactory result.

*Address at Gas Engine convention.

Weekly Summary: Investment Securities in the Metal Industries.

STOCK AND BOND SALES AT VARIOUS EXCHANGES.

Sales for January 5 to January 11, 1912, Inclusive.

	New York*	Pittsburgh	Chicago	Philadelphia	Boston	Total Sales	High	Low	Last
Allis-Chalmers	1,020					1,020	1¼	1	1
Allis-Chalmers pf.	100					100	8	8	8
American Can	14,385		1,995			16,380	12¼	11⅜	11⅜
American Can pf	12,824		1,060			12,884	93¼	91⅜	91⅜
American Car & Foundry	2,840					2,840	54¼	52⅜	52⅜
American Car & Foundry pf.	250					250	116½	116	116½
American Locomotive	710					710	36¾	34	34
American Locomotive pf.	120					120	103	103	103
American Steel Foundry	500					500	34⅜	32	33
American Brake Shoe & Fdry.	100					100	92	92	92
American Shipbuilding				75		75	48½	48½	48½
Amoskeag					144	144	78	77	78
Amoskeag pf.					423	423	100¼	100	100
Baldwin Locomotive pf.	844			447		1,291	103½	103⅛	103⅜
Bethlehem Steel	1,040					1,040	32	30¼	30¼
Bethlehem Steel pf.	1,300					1,300	61⅜	59¾	61
Cambria Iron				2		2	44⅜	44⅜	44⅜
Cambria Steel				3,552		3,552	44¼	42⅞	43
Colorado Fuel & Iron	380					380	27	26⅞	26⅞
Crucible Steel		435				435	12½	12¼	12¼
Crucible Steel pf.		600				600	83¼	82¾	83¼
Chicago Pneumatic Tool			390			390	49	47⅞	49
Electric Storage Battery				721		721	53¾	53	53¼
General Electric	10,500				498	10,998	159¼	155	158
General Motors	300					300	35	34	34½
General Motors pf.	100					400	77½	76⅛	76½
Gt. Northern Ore Prop.	6,780					6,780	42⅛	40¾	40¾
International Harvester	2,600					2,600	109	107⅞	108
International Steam Pump	100					100	32	32	32
International Steam Pump pf	500					500	85¾	85¾	85¾
Lake Superior Corporation				3,487		3,487	28⅜	27½	28⅜
Lackawanna Steel	100					100	30	30	30
McCrum Howell			40			40	40½	40¼	40½
McCrum-Howell pf.			60			60	92	91½	92
National Enameling & Stamp.	1,000					1,000	14½	14¼	14¼
National Fireproof		40				40	6	6	6
National Fireproof pf.		360				360	27	26¾	27
Nat Enam & Stamp. pf.	100					100	94¾	94¾	94¾
National Lead	4,200					4,200	53¾	51⅞	52
National Lead pf.	100					100	106¾	106⅛	106¼
Pennsylvania Steel pf.				228		228	102	101¼	102
Pittsburgh Coal	300	25				325	18⅝	18¼	18⅝
Pittsburgh Coal pf.	300	15				315	82¾	82	82
Pittsburgh Steel pf.	300					300	102½	101½	101½
Pressed Steel Car	600					600	34⅛	33	33
Pressed Steel Car pf.	150					150	101½	101½	101½
Pullman Company	475				124	599	160½	160	160½
Railway Steel Spring	100					100	32	32	32
Railway Steel Spring pf.	143					143	101	101	101
Republic Iron & Steel	2,410					2,410	26	25¼	25¼
Republic Iron & Steel pf.	800					800	85¼	85	85
U. S. Cast Iron Pipe	200					200	16½	16	16
U. S. Cast Iron Pipe pf.	140					140	50	50	50
United States Steel	587,270	200	1,625	16,420	17,594	623,109	68⅜	65⅞	66⅜
United States Steel pf.	2,480				79	2,559	111¼	110½	110½
Union Switch & Signal		405				405	88	87	87
Virginia I. C. & C.	510					510	83	73	75
Vulcan Detinning pf.	670					670	74	70	74
Westinghouse Airbrake		1,745				1,745	157½	153½	157½
Westinghouse Electric	10,560	1,972				12,632	72	68	70½
Westinghouse Electric pf.	200	80				280	117½	114⅞	117½
Warwick Iron & Steel				131		131	11½	11½	11¼

Quotations are based on New York Stock Exchange, when listed on that exchange. New York totals include sales on Consolidated Exchange.

BOND SALES.

	High	Low	Last
NEW YORK			
$7,000 Allis-Chalmers 5s	57	56⅜	56½
13,000 Bethlehem Steel 5s	94⅛	93½	94
1,000 Gen. Elec. 5s	155⅝	155⅝	155⅝
$2,000 Gen. Motors 6s	98⅜	98⅛	98⅛
7,500 Int. Steam Pump 5s	92½	92¼	92¼
10,000 Lack. Steel 5s 1915	91½	91⅜	91½
3,000 Lack. Steel 5s 1923	97	96¾	96⅝
$5,000 Lack. Steel 5s 1950	82½	80½	82
3,000 N. Y. Air Brake 6s	100	100	100
7,000 Pac. Steel Spring 5s	98½	98½	98½
30,000 Ry. I. & St. 5s 1940	93¼	92⅞	93¼
5,000 St. L. & I. 5s	102⅛	102⅛	102⅛
10,000 U. S. Motors 6s	87½	87½	87½
5,000 U. S. Steel 5s	102⅛	101⅞	102⅛
66,000 U. S. Steel 5s Reg.	101⅜	101⅜	101⅜
10,000 Va. I. C. & C. 5s	98	97	97½
15,000 West. Elec. 5s	102½	102⅛	102⅜
53,000 West. Elec. Mfg. 5s	94	93	94
PITTSBURGH			
62,000 Pitts. Coal 5s	91	89¼	90⅜
CHICAGO.			
1,000 Chi. Pneu. Tool 5s	92	92	92
BOSTON			
50,000 Ill. Steel 5s 1913	100⅜	100¼	100¼
1,000 U. S. Steel 5s	101⅝	101⅝	101⅝
BALTIMORE			
158,000 Con. Power 4½ 5s	88⅞	88	88⅞
2,000 Con. Power notes	90⅜	90⅜	90⅜
25,000 Jam. C. & C. 5s	92½	92½	92½
4,000 Pa. Water & P. 5s	90¾	90¾	90¾

BALTIMORE STOCKS.

	High	Low	Last
80 Con. Coal	101	100¼	101
60 Con. Power	97	97	97
400 Con. Power pf.	102¾	101½	102½
100 Pa. Water & Pow.	60½	60½	60½
350 U. S. Steel	66⅞	66⅜	66⅞

FISCAL STATEMENTS

Westinghouse Air Brake.

Directors of the Westinghouse Air Brake Company, at a meeting in the Westinghouse building, Pittsburgh, January 9, decided to increase the membership of the board from 9 to 11. This action created two vacancies, and to fill these Walter D. Uptegraff and Cyrus S. Gray, president of the Fidelity Title & Trust Company, were elected. It was also voted to call a meeting of the shareholders of the company to be held March 20 to vote for or against an increase in the capital stock and to adopt proposed amendments to the by-laws. The object of increasing the capital stock is to enable the directors to act upon a motion to distribute a portion of the surplus of the company to the shareholders. Prior to a meeting on March 20 a definite recommendation with reference to the amount of this distribution will be made and mailed to the shareholders when proxies are requested.

At the time of the last annual report, July 31, the company had a surplus of $7,054,894. The capital stock at present is $14,000,000, and it is believed that the amount to be distributed will be 33⅓ per cent, in the ratio of one share for every three shares held, although no official indication of the size of the stock dividend could be gained. In its history which runs back to 1869, the company has cut two large melons. The first came in 1898, when the capital was increased from $5,000,000 to $11,000,000, out of which a dividend of 100 per cent was paid in stock, the remaining million being used for the purchase of two smaller companies. A further increase to the present capital was made in 1907 and shortly after a stock dividend of 25 per cent was distributed. The company now pays 20 per cent annually in dividends.

Westinghouse Electric & Manufacturing.

Guy E. Tripp, of Boston, was chosen last week to succeed the late Robert Mather as chairman of the board of directors of the Westinghouse Electric & Manufacturing Company. Mr. Tripp was chairman of the Metropolitan Street Railway reorganization committee. He is a member of the firm of Stone & Webster, and is considered an expert in street railway and traction matters, having been connected with the management of such properties for many years.

Warwick Iron & Steel.

Stockholders of the Warwick Iron & Steel Company will hold a special meet-

ing in Philadelphia on January 16 to vote on the proposed lease of the company to the Eastern Steel Company. President Cook, of the Warwick Company, has sent a notice to the shareholders in which he says that the Eastern Steel Company has assured the stockholders 8 per cent on their stock for three years; then a distribution to stockholders of $250,000, equivalent to $1.66 per share; and after such payment, a dividend of 7 per cent yearly upon par value of stock. If the Eastern Company avails itself of an option to pay an additional $250,000 to stockholders, making a total of $500,000, it may purchase the property of the company at any time within 15 years, paying $2,000,000, of which the $500,000 would be on account. After the payment of the $500,000, the annual dividend would be 5 per cent.

Midvale Steel Company.

Midvale Steel Company at its annual meeting in Philadelphia, re-elected the present directorate.

Dividend Announcements.

COLUMBIA WEIGHING MACHINE COMPANY.—Regular 4 per cent on preferred and 4 per cent on common, payable January 20.

INTERNATIONAL STEAM PUMP.—Regular quarterly 1½ on preferred payable February 1 to stock of record January 20.

HARBISON-WALKER REFRACTORIES—Regular quarter 1½ on preferred, payable Jan. 20 to holders of record Jan. 10.

DECREASE IN IRON ORE OUTPUTS IN 1911; ESTIMATES BY THE U. S. GEOLOGICAL SURVEY.

Preliminary estimates of iron ore sold in 1911 were sent to the Geological Survey by 26 of the largest iron-mining companies in the United States at the close of the year. The combined output of these companies represents more than 80 per cent of the total production of the United States. From these returns it is estimated by E. F. Burchard, of the Survey, that the total quantity of iron ore marketed in the United States in 1911, not including stocks left at the mines, was between 43,000,000 and 46,000,000 long tons. This quantity represents a decrease of 22 to 24 per cent from the sales for 1910, which aggregated 56,889,734 long tons. The output for 1910 was the largest quantity of iron ore ever marketed in a single year in the United States, and according to the present estimate the uantity produced in the year 1911 will take fifth place, being exceeded by that of 1910, 1907, 1909, and 1906 in the order named. It is estimated that of the ore produced in 1911 between 39,250,000 and 42,000,000 long tons was red hematite, the remainder consisting of brown hematite, magnetite, and iron carbonate ores. According to the returns received the Lake Superior district, in Minnesota, Michigan and Wisconsin, apparently produced between 33,000,000 and 35,000,000 long tons of red and specular hematite, which represents a decrease of 23 to 28 per cent compared with the production of 1910—46,328,743 long tons.

In the Birmingham district, Alabama, the second largest iron-mining center, the production of iron ore apparently decreased 18 to 20 per cent from that of 1910, the estimated production for 1911 being between 3,050,000 and 3,125,000 long tons, compared with 3,802,115 long tons in the preceding year. The ore mined in the Birmingham district consists of red and brown hematite in the proportion of about 4 to 1.

The production of iron ore in Tennessee and Virginia apparently decreased only about 16 per cent, according to reports from the principal producers in those States.

As the production of pig iron for 1911 may exceed 23,500,000 tons, a larger production of iron ore might appear to be required than has been estimated above but it must be considered that at the close of 1910 there was 9,408,235 long tons of iron ore in stock at the mines of the United States, and that of this total 8,471,108 long tons was at the mines in the Lake Superior district. Just how heavily this surplus stock of ore was drawn upon in 1911 it is impossible to state at present, but owing to the increased activity in the manufacture of pig iron toward the close of 1911 it is probable that the 1910 surplus was in part cleaned up and that at the end of 1911 only a relatively small quantity of iron ore remained at the mines.

Swedish Iron Ore Output, 1910.

London "Engineering" gives statistics which show that the production of iron ore in Sweden during 1910 was the largest on record, owing to the joint causes of the favorable conditions of the European market and the deferment of work from the preceding year, on account of the protracted labor conflicts of that year. The entire output of iron ore during 1910 amounted to 5,184,002 tons of directly serviceable iron ore, and 728,601 tons of ore intended for concentration, making an aggregate of 5,549,987 tons serviceable iron ore, which shows an increase of 1,664,491 tons compared with the previous year. Iron ore has been worked from 283 mines, situated in 13 different lau, or districts, 3,511,954 tons coming from the Noorbotten lau (Lapland), and 1,107,249 tons from Kopparberg lau. An aggregate of 9,894 hands has been engaged in the iron ore mines and the concentrating and briquetting works. Extensive contracts for Swedish iron ore have been placed by America, comprising deliveries for several years, says "Engineering." During 1910 pig iron was manufactured at 82 blast furnaces, the production amounting to 603,939 tons. The production of hammered iron and steel amounted to 151,713 tons blooms, etc., and 472,249 tons of ingots.

Pig Iron Output in Japan, 1910.

According to "London and China Telegraph," the production of pig iron in Japan during 1910 has been estimated by the Department of Finance at 71,963 tons. In 1901 the amount was 32,455 tons, and the average production for the last 10 years is 50,000 tons. During 1910 the importations amounted to 117,227 tons, of which 98 per cent was received from Great Britain, while iron ore was imported to the extent of 208,190 tons, of which China supplied 61 per cent, Korea 35 per cent, and Great Britain 3 per cent.

Russian Iron, First Half, 1911.

The iron industry in South Russia showed stock on hand at different works at end of the first six months of 1911 as follows: Pig iron, 71,244 tons; iron and steel (semi-finished), 34,794 tons; iron and steel (finished), 132,786 tons; in North Russia, pig iron, 65,862 tons; iron and steel (semi-finished), 27,180 tons; iron and steel (finished), 33,534 tons.

Pig Iron Output in Germany.

The production of pig iron in Germany in 1911 amounted to 15,534,223 tons or an increase of 740,898 tons over the total of the preceding year and breaking the record of production for many years. The total for the month of December also broke the monthly record.

Changes in Aluminum Field.

The Buckeye Aluminum Company has removed its general offices from Doylestown, Ohio, to Wooster, Ohio.

The Standard Aluminum Company, of Two Rivers, Wis., has completed a new plant which is about ready for occupancy.

Lumbermen to Meet in Pittsburgh.

The annual convention of the Western Pennsylvania Retail Lumber Dealers' Association, is to be held in Pittsburgh at the Fort Pitt Hotel, January 25-26.

INDUSTRIAL WORLD

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PITTSBURGH, PA., JAN. 15, 1912.

Mr. Carnegie on the Stand.

IT IS NOT surprising that ANDREW CARNEGIE's appearance as a witness before the STANLEY INVESTIGATING COMMITTEE last week should attract a great deal of attention from the daily newspapers. The people are interested in MR. CARNEGIE. A man who could get several hundred million dollars in a lifetime, who would work more strenuously to dispose of the money to advantage than he did in his later business years to accumulate money, is a man who "makes copy" for the daily newspapers. As for furnishing new points in the history of the steel business, MR. CARNEGIE was not an important witness before the STANLEY COMMITTEE. No one, knowing his history and personality, would expect him at this late date to be able to give fresh information. What he used to know about the steel business has been told over and over again, and what savors of the new in his testimony is chiefly the spirit in which he discussed his sale of the properties to MR. MORGAN —but even that is far from new.

MR. CARNEGIE was never a man of detail. Many years ago, the ASSOCIATED PRESS left out the word "him" in quoting the epitaph MR. CARNEGIE said, at a dinner, he would like to have over his grave, and made the paragraphers gasp. The "A. P." put it: "Here lies a man who knew how to get around men much smarter than himself." Certainly he would be a pretty smart man to do that! What MR. CARNEGIE meant in the expression in which he used the word "him" after "around," was that he was a judge of men; he knew how to pick them out. His "33 young partners" did the work and attended to the details. He knew how to select them, and make them work, and he paid them. They attended to the details. MR. CARNEGIE "drove the band wagon," and in his earlier days he jollied a great many orders out of railroad men and other buyers. So we should not expect such a man, wholly out of the steel business for more than ten years, and almost out of it for 15 or 20 years, to be able to give details at this time.

What the STANLEY COMMITTEE wanted in particular was information as to what the CARNEGIE properties were "worth" when they were sold to MR. MORGAN. Naturally, they got no information on that head, For years, MR. CARNEGIE had wanted to sell out, and in those years what the properties were "worth" could be nothing else than what he could get for them. So he calmly told the STANLEY COMMITTEE that when he sold the CARNEGIE properties to MR. MORGAN for $420,000,000 (of which he himself received somewhat more than half), he sold too cheap, for he was afterwards "reliably informed" that he could have gotten $100,000,000 more. Therefore he sold them for $100,000,000 less than they were "worth."

The STANLEY COMMITTEE can hardly have been highly gratified at this testimony, but it serves the committee right. Why should it expect to get the statements it wants in that way? In an inquiry of any sort, there must first be a basis of interpretation. In the courts there has grown up a tremendous structure defining how testimony shall be received and interpreted. In engineering there are laws of nature, known and defined, and to arrive at a conclusion in a matter of engineering those laws are utilized. In this STANLEY investigation there is nothing. The committee has no fundamental basis. It asks: "What is this property worth?" and it has formulated no rule whatever to determine worth. Very likely it does not realize that a rule is needed. The value of a property may be rated in many ways. What did it cost? For how much can it be duplicated? How much has it been earning? How much can you make it earn? Under the great heads of original cost, cost of duplication and earning power there are sub-divisions. Earning power may be sub-divided into two general heads, what the property did earn and what it can earn in future. The latter can be sub-divided again, making a very important division, as to what the seller could make it earn and what the buyer could make it earn. That very question is usually the one which determines whether or not a sale will be made, whether of real estate, factory, newspapers or what not. When a newspaper is sold, for instance, it is nearly always because the purchaser thinks he can make the property earn more than the seller would have been able to make it earn. Theoretically, each has his figure of prospective earnings, and the sale price is likely to fall between the limits thus indicated. As the STANLEY COMMITTEE believes, or pretends to believe, that an illegal trust was formed, the expectation of earnings by the CARNEGIE properties if they were made part of that trust is no basis at all for the committee to reach the "worth" of the CARNEGIE properties.

MR. CARNEGIE's exultation over his deal with the ROCKEFELLER interests in 1896 for iron ore, how he "got the better of MR. ROCKEFELLER," is likely to create a false impression in the minds of those who read simply the testimony. MR. CARNEGIE has always been notoriously loose, or rather inaccurate, in his conceptions of quantity, so it is well to look at this thing from a quantitative standpoint. The deal he refers to was the 50-year lease made late in 1896 between the OLIVER IRON MINING COMPANY and the LAKE SUPERIOR CONSOLIDATED IRON MINES. It was a lease of certain ore mines, at 25 cents royalty, for 50 years, with a minimum of 600,000 tons to be mined each year. All this ore, together with 600,000 tons of ore to be mined by the Oliver company from other mines, making at least 1,200,000 tons a year, was to be carried by the ROCKEFELLER railroad and the ROCKEFELLER steamships. The viewpoint of practically the entire trade, which viewpoint MR. CARNEGIE appears to have shared, was that the rate was if anything too high. Owners of other mines were shocked, because a large buyer of ore was being taken out of the market. History tells us that the open price of MESABA BESSEMER ore in 1896, before this OLIVER-ROCKEFELLER lease was consummated, was $3.25, while in 1897, after this consumer had been taken out of the market, it was down to $2,10; MESABA NON-BESSEMER dropped in the same way from $2.40 to $1.80. The extent to which MR. CARNEGIE "got the better of MR. ROCKEFELLER" may have been more than the 600,000 tons specified, but probably the tonnage was not expected to run greatly in excess of that figure, and 600,000 tons a year nowadays is no large quantity; it is about enough to run two modern blast furnaces, while the STEEL CORPORATION actually mines over 15,000,000 tons a year on the MESABA range. When prices of ore and ore lands fell in 1897, and it was possible to buy ore lands at prices which would enable one to mine

ore to much better advantage than by paying this 25-cent royalty, even without the burden of having to ship it and other ore over the other party's transportation lines, it has been positively and circumstantially stated, and we think never denied in any quarter, that MR. CARNEGIE opposed the purchase, in 1897, of additional ore properties. They were purchased, but only because the "young partners," by heroic efforts, induced MR. CARNEGIE to consent. What did MR. CARNEGIE think of his ROCKEFELLER "bargain" in those days?

Heavy Bookings in December.

UNFILLED tonnage of the UNITED STATES STEEL CORPORATION showed a gain of 942,806 tons in December, more than twice as large an increase as shown since the practice of monthly reports was instituted the middle of 1910. In other words, the next largest increase was less than half the 942,806 tons, and was the 447,627 tons reported for November. The next largest was the 436,162 tons for January, 1911.

Every month in 1911 showed an increase with the exception of April, May and September, whereas every month in the second half of 1910 showed a decrease, and each quarter in the first half (there being no monthly reports prior to the middle of 1910) showed a decrease. Thus we have the following grand swings:

December 31, 1909	5,927,031
December 31, 1910	2,674,757
December 31, 1911	5,084,761

Thus the tonnage has not gotten back to the high level of two years ago, at the culmination of the 1909 recovery, but it has made very substantial progress in that direction. Even that high point, however, was far below some of the high points in the past. The maximum tonnage ever reported by the Corporation was 8,489,718 tons, December 31, 1906.

The STEEL CORPORATION'S capacity for an average month is approximately 1,100,000 tons, and it is understood that it operated at about 75 per cent of capacity during December, so that its shipments would be about 825,000 tons for the single month, and this added to the gain of 942,806 tons in the month makes a total of 1,775,000 tons of bookings for the month, which is 62 per cent in excess of the extreme maximum capacity of its plants.

As a matter of fact, there is nothing particularly startling in this report. Other steel companies already had intimated that their December bookings were running far ahead of capacity. There was a buying movement in progress, and in such movements the mills frequently book far beyond their capacity for a time. There is no reason to infer, furthermore, that all the bookings were in the form of actual orders accompanied by specifications. It is conceivable for specifications of this amount to have been received in December, but on the other hand if we go back to a time before this sharp movement, to October 31, we find the Corporation reporting 3,694,328 tons of unfilled tonnage, when it was running at about 800,000 tons per month actual shipments. No one would suppose that at that time it had specifications on books sufficient to continue its operations at the existing rate for an average period of four-and-a-half months, without the receipt of any additional specifications. This illustration indicates that in the Corporation's report contracts do figure, at least to an extent, though the precise extent has never before been defined.

Twenty Years Ago.

PUDDLING was just beginning definitely to get out of date 20 years ago. For rail material, wrought iron had long before yielded to BESSEMER steel, but for other products requiring wrought material the demand had so increased year by year that puddled iron held its own in tonnage while soft steel took care of the annual increase. Illustrative of the immature knowledge of general laws involving the manufacture of iron and steel, we find in our issue of January 15, 1892, an even 20 years ago, just at the time when this transition from wrought iron to soft steel was occurring, two articles on the same page, one dealing with puddling, while the other is "The Theory of Puddling." A new puddling furnace had been designed by GOTTFREID PIETZKA, chief manager of the puddling and rolling departments of the WITKOWITZ WORKS, Austria, and the reason for the invention of the new furnace was the sharp competition just furnished by the basic open hearth steel process. The article on the theory of puddling shows that information on that subject was still "live stuff," although the puddling furnace had been invented more than a century earlier (CORT'S patent of 1783), and puddling was already on the wane.

Our monthly blast furnace report showed that the weekly capacity in blast December 1, 1891, was 193,009 tons, and on January 1, 1892, 191,442 tons, although there was an increase from 309 to 310 in the number of furnaces.

The foundry of A. FULTON, SON & COMPANY, in Pittsburgh, had been leased by the city government for a period of five years, the intention being "to erect a water tower for the protection of the lower portions of the city from fire." If the city wanted such a thing nowadays it could obtain a greater elevation by leasing a portion of the roof of a skyscraper. The tower does not seem to have been built.

Editorially, favorable comment is made on the decision of the UNITED

CONVENTIONS SCHEDULED FOR THE NEW YEAR.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—New York, January 17-18.
SOCIETY OF AUTOMOBILE ENGINEERS.—New York, January 18-20.
HEATING & VENTILATING ENGINEERS—New York, January 23-28.
NATIONAL BUILDERS' SUPPLY ASSOCIATION.—New York, January 30-31. R. Dinsmore, Wilmington, Del.
ENGINE & BOAT MANUFACTURERS. — New York (Sixty-ninth Regiment Armory), February 17-24.
CANADIAN MINING INSTITUTE.—Toronto, March 6, 7, 8, 9.
NATIONAL BRICK MANUFACTURERS.—Chicago, March 6-9. T. A. Randall, Indianapolis.
NATIONAL PAVING BRICK MANUFACTURERS. Chicago, March 4. W. P. Blair, Locomotive Engineering building, Cleveland.
AMERICAN CERAMIC SOCIETY. — Chicago, March 4-6. Edward Orton, Jr., O. S. U., Columbus, O.
AMERICAN BUILDING BRICK ASSOCIATION.—Chicago, March 6. J. Parker Fiske, Flatiron building, New York.
NATIONAL CLAY MACHINERY ASSOCIATION. Chicago, March 7-12. W. N. Durbin, Anderson, Ind.
SUPPLY MEN'S ASSOCIATION OF BOILER MANUFACTURERS (U. S. and Canada)—St. Charles Hotel, New Orleans, March 11-14.
RAILWAY ENGINEERING ASSOCIATION.—Chicago, March 19-21. E. H. Fritch, Monadnock block, Chicago.
AMERICAN SUPPLY & MACHINERY DEALERS' ASSOCIATION. — Norfolk, Va., May 13-15. F. D. Mitchell, 309 Broadway, New York.
MASTER BOILER MAKERS' ASSOCIATION.—Pittsburgh, May 14-17, 1912. Harry D. Vought, 95 Liberty street, New York.
OHIO SOCIETY MECHANICAL, ELECTRICAL & STEAM ENGINEERS. — Pittsburgh, May 16, 17, 18. F. E. Sanborn, Columbus.
RAILWAY STOREKEEPERS. — Buffalo, May 20-22.
AMERICAN HARDWARE MANUFACTURERS' ASSOCIATION AND SOUTHERN HARDWARE JOBBERS' ASSOCIATION.—Nashville, Tenn., May 28-31.
RAILWAY INDUSTRIAL ASSOCIATION.—Kansas City, May 12. G. L. Stewart, St. L. S. W. Railway, St. Louis.
AIR BRAKE ASSOCIATION.—Richmond, Va., May 7-10. F. M. Nellis, 53 State street, Boston.
MASTER CAR BUILDERS. — Atlantic City, June 12-14. J. W. Taylor, Chicago.
RAILWAY MASTER MECHANICS.—Atlantic City, June 17-19. J. W. Taylor, Old Colony building, Chicago.
RAILWAY SUPPLY MANUFACTURERS. — Atlantic City, June 17-19, 1912. J. D. Conway, 2135 Oliver building, Pittsburgh.
RAILWAY BRIDGE & BUILDING ASSOCIATION. —Baltimore, October 15-17. C. A. Lichty, C. & N. Railway, Chicago.

States Supreme Court holding as unconstitutional that part of the Interstate Commerce Act which required a witness to testify against himself in criminal cases. The argument had been that the inhibition of the constitution applied only to a case where the crime was charged specifically against the individual called as witness. The Supreme Court took a broader view of the protection afforded the individual by the constitution.

There is no question that the gravity of the financial panic of June, 1893, was greatly contributed to by the existence of the Sherman silver purchase law, which was tardily repealed by the Cleveland Congress. The danger of the law apparently was not appreciated at the beginning of 1892, for we find brief editorial comment, agreeing with Mr. Springer that there ought not to be silver legislation by the existing congress, but disagreeing with his reason. His reason was that the House was Democratic and the Senate and President Republican, hence nothing could be done; therefore it was well not to attempt anything. However, Mr. Springer, who was Chairman of the Ways and Means Committee, evidenced in his statement that he held the idea that if there were to be additional silver legislation, it ought to be legislation for more silver. Our editor's view that the silver question had better be left alone than treated with legislation more favorable to silver, was evidently a very sound one, judged by the trouble even the limited recognition of silver made so soon afterward.

Buying Roofing Steel by Weight.

The Inland Steel Company, of Chicago, in a recent circular to the trade, suggests that the purchase of goods by weight could be extended to the buying of roofing and sidings. The company advises:

"When you order roofing or siding specify its weight per square (100 feet square), and when the sheets come weigh them."

This advice would be of no particular value to the buyer who does not know what such sheets ought to weigh, so the company adds, "If you haven't a table showing what galvanized or painted roofing ought to weigh, write us, and we will send you the official specifications. Legalized custom permits a variation of 2½ per cent either way; but it should vary both above and below and not always below."

Order for Castings.

The Portsmouth (O.) Machine & Castings Company is filling an order for iron columns and bed plates, for furnace work in nearby plants.

SMOKE PREVENTION

Smoke Law in Boston.—John S. Lawrence, chairman of the Chamber of Commerce committee on fuel supply of Boston, says in his annual report:

"This smoke law has now been in effect over a year. During this period it has not been necessary to appeal to the courts or even insist on a hearing. The readings taken by means of the Ringelman chart were clear and specific and gave everybody an opportunity to know whether or not they were complying with the law, and with the assistance of the smoke inspector, an expert engineer, to change their fuel, their grates and their method of firing so as to comply with its provisions.

Much of the dirt of a city is soot, and most of this soot is a result of smoke. It is almost impossible to estimate the saving in the health of the community, in wearing apparel, in cleaner buildings, in store goods, in more healthy vegetation and in dusting homes by the elimination of this smoke. It has been estimated anywhere from $100 to $1,000,000. But the most gratifying feature of this bill has been the saving of at least something to the community in the reduction of smoke, and at the same time a saving to the individual smoke-maker by a reduction in labor cost and in fuel used amounting to from five to fifty per cent. This is one of the few reforms which seems to have helped everybody and hurt no one. The law, which was built on a scale, will this year, and again next year, require a continued reduction in smoke emission, so that we may expect a constant improvement, but as long as coal is used never an entire elimination of smoke."

Reform in St. Louis.—Approximately $20,000 is being expended in smoke consuming devices, being installed as the city building at St. Louis, Mo. Prosecuting Attorney Howard Sidener, on whom devolves the prosecution of the smoke violation cases, states he seldom prosecutes a defendant without having his attention called to the City Hall, where day and night, the municipal smokestack belches forth a cloud as if in defiance of municipal ordinances. Smoke defendants recently have raised "howls" over court costs and Judge Victor N. Falkenhainer is investigating to find out what can be done. Some inspectors are allowed 50 cents a day on each case, for attendance at court. Sometimes cases are postponed three or four times, running up fees where the attendance of several inspectors is necessary. Instances are reported where inspectors have collected as high as $10 for one attendance at court where cases are "bunched."

Year's Work at Grand Rapids.—The annual report of Louis C. Towner, smoke inspector of the city of Grand Rapids, Mich., in his annual report for the fiscal year ending March 31, 1911, shows 1,518 smoke observation charts taken during the year, 64 of which were in railroad yards; 238 smoke violation notices served, and 21 complete plant records of conditions and equipment prepared and filed. The Grand Rapids smoke ordinance was passed in 1905, and the smoke inspectorship was established in March, 1907. The report gives these figures on total number of smoke devices in operation April 1, 1910 and April 1, 1911:

Type or Setting.	Apr. 1, 1910	Apr. 1, 1911
Automatic stokers	29	34
Hand fired furnaces	30	35
Various steam jets	12	13
Brick bridge walls	21	23
Using so-called smokeless coal	84	97
Heating central station	40	40
Coke or hard coal	9	10
Plants abandoned	..	21
Plants outside	..	7
New plants recorded	24	21
Ordinary setting; no change	114	83
Total plants recorded	363	384

The following is a resume of the past year's work, compared with the 1909-10 report:

	1909-10	1910-11
Plants recorded	24	21
Smoke charts taken	1,684	1,518
Notices served	295	238
Notices served owners of heating plants	36	42
Automatic stokers installed	10	5
Hand-fired stokers installed	8	5
Induced to burn smokeless coal	8	15
Induced to burn hard coal or coke	1	1
Smoke charts of locomotievs	44	64
Brick bridge installed	9	2
Using steam from central station	2	..
Plants not equipped	114	83

The department, says the report, has adopted the following method of determining the percentage of elimination of smoke from time to time: Our smoke charts are divided into five different steps or grades of smoke, xiz.: Black, dark brown, light brown, faint and clear.

The clear represents a perfect condition, (which we are striving to obtain.) The faint we consider as (1), light brown (2), dark brown (3), and black as (4), as an example: Black smoke for a period of 15 minutes will carry to the air as much carbon as dark brown will in 20 minutes, light brown in 30 minutes or as faint will in 60 minutes, and multiplying the number of half-minute readings noted on the chart under each grade by the number used to designate such

grade and adding them together will give the standing of the stack for the particular hour in which the observation chart was made, and by assembling 25 or 30 of these charts and averaging them we secure a fair idea of the average condition of the stack.

The averages of the charts taken each month are shown in the following table and improvement of conditions will be readily determined by comparing percentages:

Months.	No.	Pr Ct.
April	120	85.4
May	107	84.5
June	102	85.6
July	122	86.8
August	95	88.0
September	156	89.8
October	123	90.8
November	132	89.2
December	135	89.3
January	195	90.1
February	105	90.8
March	126	92.0
Totals	1,518	....
Per cent elimination	....	88.7

The financial statement for the year is as follows:

Balance in fund March 31, 1910.	$ 362.74
Budget appropriation	1,000.00
Inspector's salary	1,200.00
Office supplies	10.75
	$1,210.75
Balance in fund March 31, 1911..	151.99
	$1,362.74
Balance in fund April 1, 1911 ...	151.99

The End of "120 Broadway."

[From the New York Times.]

With the death of Harriman the Equitable building, which went up in flames Tuesday as only a "near-fireproof" building can go, lost its place in the daily gossip of Wall Street. Since then the reporters have had few occasions for taking the easy riding old wooden cars up to the fourth floor. When Harriman was alive and active in market movements it was a rare financial article that omitted some mention of "operations directed from 120 Broadway." It was seldom that any one spoke of E. H. Harriman or Union Pacific interests in explaining a market action; it was always "120 Broadway." There was only a small settee in the outer Harriman offices, and on the frequent occasions when something momentous was expected to happen the reporters used to assemble around the broad window seats near the elevators to catch Mr. Harriman before he got within reach of his secretary. The Harriman offices had been outgrown even before it was decided to bring the Chicago force here necessitating plans for the removal to 165 Broadway, and if the fire had come two weeks later it would have had only a sentimental effect for the management.

RECENT PATENTS

The following patents, granted to January 2, 1912, are reported expressly for the Industrial World by Siggers & Siggers, patent attorneys, Suite No. 30, National Union building, Washington, D. C.:

1,013,439—Albert M. Powell, Worcester, Mass., improvements in metal planing machine. The device relates to a novel means for mechanically controlling the velocity of movement of the work-supporting table or platen in a metal-planing machine, whereby the cutting speed or advancing run of the platen, after commencing its movement, may be accelerated and retarded at desired intermedial places between the extreme limits of its action—the object being to attain high efficiency in the execution of actual work, while avoiding shocks and recoil strains upon the cutting tool, such as might tend to fracture the tool, or cause the breaking out or crumbling of the metal operated upon as the tool enters and leaves the same. There is a low-speed driving means, a high-speed driving means, devices connecting the driving means with the shaft, a power-shifting mechanism having corresponding action stages, a set of three shifting-rockers, and a series of rocker-actuating dogs secured to the platen, including the initial-cut dog, the backing-dog, an acceleration-dog, and a retardation-dog.

1,013,839—James Fillmore Cox, Bayonne, N. J., improvements in pipe-bending machine, one-half interest of which is assigned to Matthew T. Cronin, Bayonne, N. J. The invention aims to provide for bending pipes cold into curvilinear or segmental outline, the operation to be effected without the aid of a filling or core for the pipe as heretofore ordinarily required to prevent the changing of the cross-sectional outline or form of the bent or curved portion of the pipe. The mechanism includes an endless carrying member, pipe-bending means, a follower, connecting means between follower and carrying member, a lost-movement compensating means for the follower and a mandrel and guide rod.

1,013,212—William M. Neckerman, Youngstown, O., improvements in pipe-threading machine. The objects of the device is to provide means for stopping the pipe at a definite place before clamping it in the pipe-gripping head, and for moving the die-head to the end of the pipe without the attendant changing the position in which he is when actuating the jaws on the said pipe-gripping head. It consists of a head having an axial opening therein, gripping-jaws on the head arranged to connect the pipe to the head, means for actuating the jaws, a die-head, a stop arranged to be moved into the path of the pipe when moving through the gripping head toward the die-head, and means connecting the stop to the jaw actuating means so that the stop will be moved out of line with the pipe when the jaws grip the pipe.

The following recently-granted patents are reported expressly for the Industrial World, by J. M. Nesbit, patent attorney, Park building, Pittsburgh, from whom printed copies may be procured for 15 cents each:

Rotary engine, J. F. Dubus, New Orleans, La.; steam system, J. W. Gamble, Philadelphia, assignor to Harrison Safety Boiler Works, same place; stop mechanism for shears, G. J. Bryen, Duquesne, Pa.; turbine, Alexis Chaleil, Paris, France; metallurgy of zinc, F. L. Clerc, Boulder, Colo.; furnace jacket, C. A. Fischer, Chicago, assignor to Allis-Chalmers Company, Milwaukee; coke oven door, Robert Hay and Percy B. Rule, Mount Pleasant, Pa.; process and apparatus of balling scrap metal (2), D. H. Lentz, Chicago; process of producing alumina, E. D. Kendall, Elizabeth, N. J.; apparatus for treating wire rods, W. J. Powney, Chicago; governing mechanism for turbines, R. H. Rice, Lynn, and J. G. Callan, Nahant, Mass., assignor to General Electric Company; armor plate, Hugh Savage, Seraing, Belgium; turbine, W. E. Snow, Dedham, Mass., assignor to B. F. Sturtevant Company, Boston; tool holder and securing device for same, F. F. Clarke, Franklin, Pa.; process for welding copper, R. C. Davidson, Fort Blackmore, Va.; rotary gasoline engine, A. N. Dittlinger, St. Louis; coke oven door, Richard Kearns, Mammoth, Pa.; cover for pits, J. C. Cromwell, Cleveland, assignor to The Garrett-Cromwell Engineering Company, same place; elastic fluid turbine, Frederick Samuelson, Rugby, England, assignor to General Electric Company; blow-off valve, P. H. Murphy, Pittsburgh; rolling mill, A. A. Karl, Kowak, Bous-on-the-Saar, Germany; method of producing I-beams, Hugo Sack, Dusseldorf, Germany; solid rolled metal I-beam of nine inches and under 12 inches in height, also solid roller metal eight-inch I-beam, also solid rolled metal I-beam of 16 inches and under 25 inches in height, also solid rolled metal I-beam of 12 inches and under 16 inches in height, all granted to Henry Grey, New York, assignor to American Universal Mill Company, same place.

Securities valued at $15,000,000 were tied up in the Equitable fire at New York last week.

Market Conditions in Pig Iron.

THE LOCAL MARKET.

Basic Continues in Heavy Demand in Eastern and Western Pennsylvania and Ohio Territory—Foundry Iron Firmer.

PITTSBURGH.—Basic iron continues the market leader in Pittsburgh and Valleys. The important sales last week were 15,000 tons to the Pittsburgh Steel Company, for deliveries at Monessen, Pa., during January and February, most of the iron coming from Midland (Pa.) furnace. The Allegheny Steel Company bought 8,000 to 9,000 tons for first half delivery. Both these sales were said to have been been closed under $12.50, Valley furnace.

Two additional inquiries for basic iron are in the Pittsburgh market. In Cincinnati territory, the American Rolling Mill Company, of Middletown, O., is ready to close on 8,000 tons of basic. In Philadelphia district two round blocks of basic, aggregating 10,000 tons, were closed during the week.

A Philadelphia steel interest has taken about 2,000 tons of basic in that market. The Midvale Steel Company, Philadelphia, has closed for 8,000 tons of Bessemer, taking most of the tonnage from Eastern furnaces.

Foundry iron has stiffened during the week in Valley markets, several sales being closed at $13.25 furnace, all for small tonnages, while several producers are holding firm at $13.50, for prompt and first half shipment. Forge iron is quieter, after the lively buying movement of the first of the year, with the market minimum firm at $12.75, Valley furnace.

Sales of Malleable in West.

CHICAGO. — Malleable is the strong feature of the local market, two consumers having taken upward of 14,000 tons for first half shipment. Southern iron continues to be quoted at $14.60 delivered Chicago, for any delivery during this quarter.

Eastern Pennsylvania Inquiries.

PHILADELPHIA. — Better inquiry for iron was noted last week in this teritory, especially from jobbers and general founders in New Jersey and Connecticut. It is estimated that there are inquiries pending in this territory, mostly in small tonnages, aggregating about 18,000 tons. The dullness continues in Philadelphia district. Steel producing interests in Eastern Pennsylvania have extended their furnace capacity by blowing in new stacks, but they are taking up the larger outrun and little new supplies are coming into the open market. The only large transaction of the week was the taking of 8,000 tons of Bessemer by the Midvale Steel Company.

More Stock Iron in South.

BIRMINGHAM.—It is believed there will be need for all the accumulated iron on furnace and warrant yards. Two furnaces are ready to light. Three other furnaces are undergoing re-lining and will be ready for operation by the middle of February. The Southern manufacturers are still hopeful of getting assistance from the railroads in the way of reduced freight rates, so as to place their iron in the Ohio gateways. Application is to be made of the Interstate Commerce Commission to look into the matter of freight rates, and the hope is expressed that a dollar per ton reduction may be secured.

Ten dollars for No. 2 foundry grade continues to be granted favored buyers in this market, but $10.25 and $10.50 are the asking prices on No. 2 for full first half. A few sales have been made for delivery during the last half of the year, but producers are not looking for business for that period as yet.

Cast iron pipe interests report conditions with them bright and the prospects good. There is a steady manufacture of pipe throughout Southern territory, with prices firm. There will be need for a large quantity of cast iron pipe this year in the South.

Quiet in New York.

NEW YORK.—There were few developments in the pig iron trade in this territory during the week. There was only the usual run of small orders for immediate shipment. The tonnages pending are smaller than has been the case since the middle of November. Inventory taking is held accountable for this condition.

Scrap Market in the East.

NEW YORK.—Holders of scrap appear willing to await developments, being convinced that better values are coming. Consumers demand concessions. A deadlock is the result and little business is being done, with heavy melting steel moving in occasional small tonnages at $10 to $10.25.

Southern Iron Sticks to $10.

CINCINNATI.—Southern iron, for first quarter, sticks at $10 Birmingham, with $13.25 asked for first half delivery. Northern iron is unchanged. Two inquiries for Northern basic, in this market, aggregate 10,000 tons. Southern No. 3, for first quarter still is to be had at $9.50 Birmingham.

Rogers, Brown & Company, in their regular weekly report to the INDUSTRIAL WORLD, say of Cincinnati market conditions:

After the holiday season, 1912, starts in a promising way. While unexciting, it is impressive in the amount of business in prospect and the solidity of prices in all districts. There has been better business elsewhere during the week than in the local territory, but it is due more to conditions of furnace books at these points. Of the local furnaces, many are so well sold ahead they are not actively going after business, while others are even refusing to quote beyond a limited period owing to the excellent shape of their commitments.

It appears that consumption is fast catching up with the capacity of the fur-

PRINCIPAL PIG IRON SALES OF THE WEEK.

TONS.

Pittsburgh.

10,000 BASIC to Pittsburgh Steel Company, January delivery at Monessen, Pa., part from Midland, Pa., furnace and part from Valleys; price under $12.50, Valleys.

8,000 BASIC to Allegheny Steel Company, first half, $12.50, Valleys or a shade under.

2,000 BESSEMER to buyer east of Pittsburgh, $14.25, Valleys.

Cincinnati.

4,000 NORTHERN No. 2, first half, to Ohio consumer, at market.

1,000 SOUTHERN No. 4 and forge, to Louisville sanitary plant, second uarter.

800 MALLEABLE to Central Ohio consumer, first quarter, $13, Ironton.

Philadelphia.

8,000 BESSEMER taken by Midvale Steel Company from Pittsburgh district producers, about $16, delivered.

2,000 BASIC to Eastern steel interest, from Southern makers, nearby shipment, $14.20, delivered.

1,500 VIRGINIA No. 2X to Philadelphia district consumer, $12.25, Virginia furnace.

Chicago.

6,000 MALLEABLE, first half, to Indiana car interest, at market.

1,000 NORTHERN No. 1 FOUNDRY to Indiana melter, first half shipment, $14.75, Chicago furnace.

New York.

3,000 NORTHERN PIPE IRONS, to Pennsylvania interest, first quarter, $14.25, delivered.

2,000 No. 2X, sold by Buffalo furnace to nearby consumer, $13.50, Buffalo furnace, first half.

Birmingham.

10,000 SOUTHERN FOUNDRY IRON, sold by Republic Iron & Steel Company, for export.

naces and in spite of the increased manufacturing capacity during the past few years, it will not be long before conditions are more nearly balanced than for a long time past.

As is usual with coke during the holiday season, last week was a let-down from the weeks before and it may take some days to get back to normal in all districts. Coke is stronger throughout, having recently felt the influence of improving iron conditions.

THE COKE MARKET.

Spot Coke Hard to Get — Prices Firmer.

CONNELLSVILLE. — The production of coke for the Connellsville region for the week ending January 6 was 322,906 tons, which compares with 315,931 tons for the week ending December 2. The drop through the holiday season was less severe than in the average year. The "Courier's" comparative figures for two weeks show:

	Week Ending	
Coke Produced By—	Dec. 30	Jan. 6
Furnace interests (tons)	167,709	185,256
Merchant ovens (tons)	126,282	137,650
Total output (tons)	294,189	322,906
Active ovens	26,403	28,093
Shipments (cars)	8,427	9,095

Of the prospects, the "Courier" says in its current issue:

Production increased last week nearly 30,000 tons over the previous week, but the previous week was holiday week when all the plants laid off on Christmas. Compared with the week ending December 23, the production of last week shows the comfortable increase of 4,221 tons. The 1,500 ovens fired up last week by the H. C. Frick Coke Company added comparatively little to the week's production, but they will increase it materially this week. Shipments show a gain of over 600 cars. While the blizzard handicapped the railroads to some extent the coke movement went forward with gratifying regularity. The yards of the region continue well cleaned of stock and demurrage coke is almost a thing of the past. The Connellsville operators enter upon 1912 with higher hopes and greater confidence than has been theirs for some years past.

All Prices Higher.

PITTSBURGH.—Spot coke is at higher levels, asking prices being $1.85@$1.90, with emergency shipments negotiated with difficulty. Contract furnace coke has felt the change in position, and is quoted at $1.80 to $2, on six-months' contracts. Prompt foundry coke is available at $2.

Scrap Prices Unsettled.

PITTSBURGH. — With large purchases of scrap, and several substantial inquiries, the local scrap market is excited and unsettled. There are wide ranges in quotations. However, on actual sales, the basis of $12.75 to $13 on heavy melting steel seems unchanged.

Crude and Finished Steel Products.

AWAIT RAIL ORDERS.

Rumors of Impending Price Changes Denied in East.

NEW YORK. — The Pennsylvania Railroad order for rails should be announced this week, and will amount to about 150,000 tons. Officials of the company are now doing the last work on the specifications. The New York Central order will be placed a little later, and will amount to 180,000 tons. Last year this company bought 176,000 tons. The St. Paul will order about 60,000 tons also in the near future. Several other contracts, totaling about 50,000 tons, will also be heard from.

New York heard many rumors of price advances in finished steel during the week, but all were authoritatively denied. The report persists that wire will be advanced $1 a ton within the next week or 10 days. Even at this advance wire and nail mills will be selling lower than they ought. Plates are stiffening at $1.20, with little being sold at the old minimum of $1.15, Pittsburgh base. Prices on fabricated material also are up $2 to $4 a ton.

Structural Award to Pittsburgh Mill.

PITTSBURGH.—Jones & Laughlin Steel Company took largest structural award of the week, for 11,000 tons of steel for the Michigan Central station, Detroit.

Bar iron is $1 higher, selling in Chicago at $1.17.

STEEL SPECIFICATIONS HEAVY.

Current Production Not Expected to Increase Further.

PITTSBURGH. — Specifications for steel products continue good, also current production, but production for the next 60 days will be only slightly heavier than the past 60.

Crude steel is not due for any further advances immediately. Output has reached 82 to 85 per cent of maximum in Pittsburgh district. Billet quotations are fixed at $20, Pittsburgh mill, with forging billets firm at the new price of $28. There are occasional emergency demands for prompt sheet bars, but the producers are content to quote $21, mill.

Rail Orders Car Business Pending.

NEW YORK.—The Delaware & Hudson has placed its order for 12,000 tons of open-hearth rails with the Bethlehem Steel Company. This is 2,000 tons more than ordered by that railroad last year. The Southern Railway has ordered 3,000 tons from the Maryland Steel Company. The Northern Pacific has ordered 35,000 tons from Illinois Steel, Lackawanna and Bethlehem. The large rail orders of the Pennsylvania and the New York Central have not yet been heard from. Among the railroads making inquiry for equipment are the following: Grand Trunk, 500, express, 500 refrigerator and 300 ballast cars; Rock Island, 2,500 box, 500 furniture and 200 ballast cars; Chesapeake & Ohio, 200 flat cars; Chicago Burlington & Quincy, 2,500 gondolas.

PIG IRON PRODUCTION FOR DECEMBER.

	No. stks.	In blast	Out blast	Product'n
New York	24	13	11	126,687
New Jersey	7	0	7	.....
Pennsylvania, Eastern	58	26	32	181,276
Pennsylvania, Western	27	15	12	103,138
Pittsburgh District	53	38	15	474,266
Shenango Valley	20	11	9	99,483
Mahoning Valley	24	19	5	104,549
Ohio, Central and Northern	23	12	11	141,341
Ohio, Hocking and Hanging Rock	15	6	9	23,680
Wheeling District	14	9	5	104,549
Maryland, Virginia and Kentucky	32	9	22	48,501
Alabama	46	20	26	161,884
Tennessee, Georgia and Texas	20	7	13	25,493
Illinois, Indiana, Minnesota, Wisconsin, Missouri, Michigan, Colorado, Washington	51	29	22	342,069
*Totals for December	414	214	200	2,043,270
†Totals for November	414	211	203	1,999,433
*Totals for October	416	214	202	2,102,147
†Totals for September	416	213	203	1,976,102
*Totals for August	418	203	215	1,926,637

*Month of 31 days; †Month of 30 days.

Range of Weekly Quotations of Pig Iron

PIG IRON	Jan. 13.	1912. Jan. 6.	1911. Dec. 30	Dec. 23.	Dec. 16.	Dec. 9.	Dec. 2.
At Pittsburgh—							
Bessemer	15.15	15.15	15.15	15.15	15.15	15.15	15.15@15.40
Basic	13.35@13.40	13.40	13.40	13.40	13.40	13.40	13.40
No. 1 Foundry	14.90	14.90	14.50	14.50	14.50	14.50	14.75
No. 2 Foundry	13.90@14.40	13.90@14.15	13.90@14.15	13.90@14.15	13.90@14.15	14.15	14.15@14.40
Malleable	13.65@13.90	13.65	13.65	13.65	13.65	13.40@13.65	13.40
Gray Forge	13.40@13.65	13.40@13.65	13.40@13.65	13.40@13.65	13.40	13.40@13.65	13.40@13.65
Low Phosphorus	21.00@22.00	21.00@22.00	21.00@22.00	21.00@22.00	21.00@22.00	21.00@22.00	21.00@22.00
Ferro Silicon, 50 per cent.	70.00@71.00	70.00	70.00	70.00	68.50@70.00	65.00@66.00	65.00@66.00
Ferro Silicon, 10 per cent.	22.90	22.90@23.90	22.90@23.90	22.90@23.90	23.90	23.90	23.90
Silicon Spiegel, 10 to 12 per cent.	23.40@24.90	24.40	24.40	24.40	24.40	24.90	24.90
Spiegeleisen	21.50@22.50	21.50@22.50	21.50@22.50	21.50@22.50	21.50@22.50	21.50@22.50	21.50@22.50
Ferro Manganese	42.95	41.95	41.95	40.45	40.45	39.45@40.45	39.45@40.45
At Virginia Furnaces—							
Basic	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. 1 X	13.00	13.00	12.75	12.75	12.75	12.75	12.75
No. 2 X	12.25@12.50	12.25@12.50	12.25	12.25	12.25	12.25	12.25
No. 2 Plain	12.00@12.50	12.00@12.50	12.00@12.25	12.00@12.25	12.00@12.25	12.00@12.25	12.00@12.25
Gray Forge	12.00	12.00	12.00	12.00	12.00	12.00	12.00
At Birmingham—							
No. 1, Foundry	10.75@11.00	10.75@11.00	10.75@11.00	10.75@11.00	10.50	10.50	10.50
No. 2, Soft	10.00@10.50	10.25@10.50	10.00@10.50	10.00@10.25	9.75	9.75	9.50@10.00
No. 2, Foundry	10.00@10.50	10.25@10.50	10.00@10.50	10.00@10.25	9.75	9.75	9.50@10.00
No. 3, Foundry	9.50@9.75	9.50@9.75	9.50@9.75	9.50@9.75	9.50@9.75	9.50@9.75	9.00@9.75
No. 4, Foundry	9.50	9.50	9.50	9.50	9.50	9.50	9.50
Gray Forge	9.25@9.50	9.25@9.50	9.50	9.50	9.50	9.50	9.50
At Philadelphia—							
No. 2X Foundry	15.00@15.25	15.00@15.25	15.00@15.25	15.00@15.25	15.00@15.25	15.00@15.25	15.00@15.25
Basic	14.50	14.50	14.50	14.50	14.50	14.50	14.50
Gray Forge	14.25@14.50	14.25@14.50	14.25@14.50	14.25@14.50	14.25@14.50	14.25@14.50	14.25@14.50

STEEL.							
Tons of 2240 lbs., at Pittsburgh—							
Bessemer Billets	20.00	20.00	20.00	19.00@19.50	19.00@19.50	19.00@19.50	19.00@19.50
Open Hearth Billets	20.00	20.00	20.00	19.00@19.50	19.00@19.50	19.00@19.50	19.00@20.00
Forging Billets	26.00@28.00	26.00@28.00	26.00	25.00	24.00@25.00	24.00@25.00	24.00@25.00
Sheet and Tin Bars	21.00	21.00	21.00	20.00@21.00	20.00@20.50	20.00@20.50	19.50@20.50
Bessemer Steel Rails	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Open-Hearth Steel Rails	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Light Steel Rails—							
25 to 45 lbs.	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00
16 and 20 lbs.	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00
12 and 14 lbs.	28.00	28.00	28.00	28.00	28.00	28.00	28.00
8 lbs.	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Bessemer Wire Rods	24.00@25.00	24.50@25.00	24.50@25.00	25.00	25.00	25.00	25.00
Open Hearth Wire Rods	24.00@25.00	25.00	25.00	25.00	25.00	25.00	25.00
Muck Bar, all pig iron	28.00@29.00	28.00@29.00	28.00@29.00	28.00@28.50	27.00@28.00	27.00@28.00	28.00@29.00

FINISHED PRODUCTS.							
Tons of 2000 lbs., at Pittsburgh—							
Skelp Steel Grooved	23.50@24.00	23.50@24.00	23.50@24.00	23.50@24.00	23.50@24.50	23.50@24.50	23.00@23.50
Skelp Steel Sheared	24.00@24.50	24.00@24.50	24.00@24.50	24.00@24.50	24.00	24.00	23.50@24.00
Universal Plates	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Sheets, No. 28	38.00@40.00	38.00@40.00	38.00	38.00	37.00@38.00	37.00@38.00	37.00@38.00
Galvanized Sheets, No. 28	58.00@60.00	58.00@60.00	58.00	58.00	57.00@58.00	57.00@58.00	57.00@58.00
Beams, 3 to 15 inches	25.00@26.00	25.00@26.00	25.00@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00
Beams, over 15 inches	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00
Channels, 3 to 15 inches	25.00@26.00	25.00@26.00	25.00@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00
Channels, over 15 inches	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00
Tees, 3-inch and larger	25.00@26.00	25.00@26.00	25.00@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00
Zees, 3-inch and larger	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00
Angles, 3 to 6 inches	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00
Angles, over 6 inches	25.00@26.00	25.00@26.00	25.00@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00
Tank Plate	24.00@26.00	24.00@26.00	24.00@26.00	24.00@26.00	24.00@26.00	24.00@26.00	24.00@26.00
Boiler Plate	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00
Hoops	25.00@26.00	25.00@26.00	25.00@26.00	27.00	27.00	27.00	27.00
Bands	24.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00
Bessemer Steel Bars	23.00@24.00	23.00	23.00	23.00	22.00@23.00	22.00@23.00	22.00@23.00
Open Hearth Steel Bars	23.00@24.00	23.00	23.00	23.00	22.00@23.00	22.00@23.00	22.00@23.00
Common Iron Bars	26.00	25.00	25.00	25.00	24.00	24.00	24.00

and Various Finished Iron and Steel Products.

Nov. 25.	Nov. 18.	Nov 11.	Nov. 4.	Oct. 28.	Oct. 21.	Oct. 14.	Oct. 7.	Sept. 30.	1911. Jan. 14.
15.15@15.40	15.15@15.40	15.15@15.40	15.15@15.40	15.40	15.40	15.55	15.55	15.90	15.90
13.40	13.40	13.40	13.40	13.40	13.40	13.40@13.65	13.50	13.50	14.40
14.75	14.75.	14.75	14.75	14.75	14.75	14.75	14.75	14.75	15.15@15.40
14.15	14.00@14.15	14.15@14.40.	14.15@14.40	14.40	14.40	14.40	14.15	14.25	14.65@14.90
13.40	13.50@13.70	13.40	13.40@13.90	13.90	13.90@14.00	13.90@14.15	13.90@14.15	13.90@14.15	14.40
13.40	13.40	13.40@13.50	13.40@13.65	13.65	13.65	13.40@13.90	13.40@13.90	13.90	14.15@14.40
21.00@22.00	21.00@22.00	21.00@22.00	21.00@22.00	21.00@22.00	21.50@22.50	21.50@22.50	21.50@22.50	21.50@22.50	26.00
65.00@66.00	64.00@65.00	64.00	60.00@62.00	59.00@60.00	58.50@60.00	58.00@59.50	57.00	57.00	54.50@55.50
23.90	23.90	23.90	23.90	23.90	23.90	23.90@24.90	24.90@25.90	24.90@25.90	24.90
24.90	24.90@25.90	24.90@25.90	24.90	24.90	25.90	25.90@26.90	25.90@26.90	25.90@26.90	25.00@26.00
21.50@22.50	21.50@22.50	21.50@22.50	21.50@22.50	22.50@23.50	23.50@25.50	23.50@25.50	23.50@25.50	23.50@25.50	23.90@25.90
39.45@40.45	39.95@40.45	39.95@40.45	38.95@40.45	38.95@40.15	38.65@38.95	38.95@40.45	38.95@40.45	38.95@40.45	40.45
12.00	12.00	12.00	12.25@12.50	12.25@12.50	12.25@12.50	12.25@12.50	12.25@12.50	12.25@12.50	12.50@13.00
12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75	13.75@14.00
12.25	12.25	12.25	12.25@12.50	12.25@12.50	12.25@12.50	12.25@12.50	12.25@12.50	12.25@12.50	12.50@13.00
12.00@12.25	12.00@12.25	12.00@12.25	12.25@12.50	12.25@12.50	12.25@12.50	12.25@12.50	12.25@12.50	12.25@12.50	12.50@13.00
12.00	12.00	12.00	11.75	11.75	11.75	11.75	11.75	11.75	11.75@12.25
10.50	10.50	10.50	10.50	10.50	10.50	10.50	10.50	10.50	12.50@13.00
10.00	10.00	10.00	10.00	10.00@10.25	10.00@10.25	10.00@10.50	10.00	10.00	11.00
10.00	10.00	10.00	10.00	10.00@10.25	10.00@10.25	10.00@10.50	10.00	10.00	11.00
9.50@9.75	9.50@9.75	9.50@9.75	9.50@9.75	9.50@10.00	9.50@10.00	9.50@10.00	9.50@10.00	9.50@10.00	10.50@11.00
9.50	9.50	9.50	9.50	9.50	9.50	9.25@9.50	9.50@10.00	9.50@10.00	10.25@10.75
9.50	9.50	9.50	9.50	9.50	9.50	9.50@10.00	9.25@9.50	9.25@9.50	9.75@10.00
15.00@15.25	15.00@15.25	15.00@15.25	15.00@15.25	15.00@15.25	15.00@15.25	15.00@15.25	15.00@15.25	15.00@15.25	15.50
14.50	14.50	14.50	14.25@14.75	14.25@14.75	14.25@14.75	14.50@14.75	14.50@14.75	14.50@14.75	14.75@15.00
14.25@14.50	14.25	14.25	14.00@14.25	14.00@14.25	14.00@14.25.	14.00@14.25	14.00@14.25	14.00@14.25	14.00@14.25

19.50@20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	21.00	23.00
19.00@20.00	19.00@20.00	20.00	20.00	19.00	19.00	19.00@19.50	19.00	19.00	23.00
24.00	24.00	24.00	24.00	24.00	24.00	25.00	25.00	25.00	27.50@28.00
20.00@20.50	20.00@21.00	20.00@21.00	20.00@21.00	20.00@21.00	20.00@21.00	20.00@21.00	20.00@21.00	20.00@22.00	24.00
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@26.00	25.00@
26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00	26.00@27.00
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	29.00
25.00	25.00@25.50	26.00	26.00	26.00	26.00	26.00@26.50	26.00@26.50	26.50@27.00	27.50@28.00
25.00	25.00@26.00	26.00	26.00	26.00	26.00	26.00@26.50	26.00@26.50	26.50@27.00	27.50@28.00
28.00@29.00	28.00@28.50	28.00@28.50	28.00@28.50	28.00@28.50	28.00@28.50	28.00@28.50	28.00@28.50	28.00@29.00	29.00

23.00@23.50	23.00@23.50	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
23.50@24.00	23.50@24.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	26.00@27.00
28.00	28.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	28.00@29.00	29.00@30.00	29.00@31.00
37.00@38.00	37.00@38.00	37.00@38.00	37.00@38.00	37.00@38.00	37.00@38.00	37.00@40.00	37.00@40.00	38.00@40.00	44.00
57.00@58.00	57.00@58.00	57.00@58.00	57.00@58.00	57.00@58.00	57.00@58.00	58.00@60.00	58.00@60.00	58.00@60.00	62.00@64.00
25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	28.00
26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	29.00
25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	28.00
26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	29.00
25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	28.00
26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	26.50@27.00	29.00
25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	28.00
25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	25.50@26.00	29.00
24.00@26.00	24.00@26.00	24.00@26.00	24.00@26.00	24.00@26.00	24.00@26.00	24.00@26.00	25.00@26.00	25.00@26.00	28.00
25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	25.00@27.00	26.00@27.00	30.00
27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	29.00@30.00
23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	23.00@24.00	28.00@29.00
22.00@23.00	22.00@23.00	22.00@23.00	22.00@23.00	22.00@23.00	22.00@23.00	22.00@23.00	23.00@24.00	23.00@24.00	28.00
22.00@23.00	22.00@23.00	22.00@23.00	22.00@23.00	22.00@23.00	22.00@23.00	22.00@23.00	23.00@24.00	23.00@24.00	28.00
24.00	24.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	24.00@25.00	27.00

Detail Prices on Finished Product in Iron and Steel.

STEEL PLATES.

Base prices, tank quality, ¼-inch thick, per 100 lbs., f. o. b. Pittsburgh:
64 to 100 inches wide $1.25 $1.30

Extras over base price—

3/16-inch thick	.10
Gauges 7 and 8	.15
Gauge 9	.25
Gauges 10 and 11	.25
Circles	.20
Sketches	.10
Boiler and flange quality	.10
Marine steel	.40
Widths over 100, to 110 in.	.05
Widths over 110, to 115 in.	.10
Widths over 115, to 120 in.	.15
Widths over 120, to 125 in.	.25
Widths over 125, to 130 in.	.50
Widths over 130 in.	1.00

IRON AND STEEL SCRAP.

Old steel rails, re-rolling	$12.50	$13.00
Old steel rails, remelting	12.00	12.50
Steel axles	16.00	16.50
Heavy melting scrap	12.50	13.00
Low Phosphorus	14.75	15.25
Sheet scrap	10.25	10.75
No. 1 wrought scrap	12.25	12.75
Machine shop turnings	9.00	9.25
Cast borings	8.25	8.75
No. 1 cast	12.25	12.50
Old car wheels	12.75	13.00
Old iron rails	14.25	14.75
Railway Malleable	11.75	12.00
Iron car axles	21.00	22.00

TIN AND TERNE PLATES.

Open market, f. o. b., Pittsburgh—

Coke tins:	
14x20, 100 lbs.	$3.40
14x20, 95 lbs.	3.35
14x20, 90 lbs.	3.35
Charcoal tins:	
A grade, 14x20, I. C.	4.40
A grade, 14x20, 100 lbs.	4.25
Ternes:	
20x28, I. C.	6.60
20x28, 200 lbs.	6.30

STEEL RAILS.

Fifty pounds and heavier—

500-ton lots and over	$28.00
Car load lots	30.00
Less than car load lots	32.00
Light rails—	
12 and 14 pounds	30.00
16, 20 and 25 pounds	28.00
30 and 35 pounds	28.00
40 and 45 pounds	28.00
Relaying rails—	
Subject to inspection, f. o. b., Pittsburgh:	
Standard 50 lbs. & heavier	$23.00 $23.50
25 to 40 lbs	24.00 24.50
16 to 20-pound rails	24.00 25.00
12 pound rails	25.00 26.00

STEEL SHEETS.

Open market, per 100 lbs., f. o. b. Pittsburgh—

Gauge.	Black	Galv.
30	$2.05	$3.25
29	1.95	3.00
28	1.90	2.90
27	1.85	2.75
25–26	1.80	2.60
22–24	1.75	2.40
17–21	1.70	2.30
15–16	1.65	1.95
13–14	1.60	1.95
Blue Annealed.		
10 and heavier	$1.40	$1.45
11–12	1.45	1.50
13–14	1.50	1.55
15–16	1.60	1.65
Corrugated Roofing.		
Per square, 28 gauge, f. o. b., Pittsburgh—		
Painted	$1.35	
Galvanized	2.50	$2.55

WIRE AND NAILS.

Prices to jobbers in car load lots, per 100 lbs.; retailers 5 cents additional :

Wire nails	$1.50@1.60
Plain wire	1.30@1.45
Painted barbed wire	1.55@1.70
Galvanized wire	1.80@2.00

ALUMINUM PRICES.

No. 1 ingots, guaranteed over 99 per cent pure are held at 24c per pound in ton lots.

For small lots of 100 pounds and over advances of 3c per pound are charged.
Rods and wire .....base price 31 cents
Sheets .....base price 33 cents

BITUMINOUS COAL PRICES.

Pittsburgh district, f. o. b. mine—

	Per Ton
Mine-run	$1.15@1.25
¼-inch	1.25@1.35
1¼-inch lump	1.35@1.45
Slack	.65@ .75

	Ohio	
At Cleveland—	Pgh.	No 8
Mine-run	$2.13	$1.95
¼-inch	2.23	2.05
1¼-inch lump	2.33	2.15
Slack	1.63	1.40

	Free-	
At Buffalo—	Pgh.	port.
Mine-run	$2.40	$2.10
¼-inch	2.50	2.20
1¼-inch lump	2.60	2.30
Slack	1.90	1.60

	Ohio	
At Detroit—	Pgh.	No. 8
Mine-run	$2.55	$2.25
¼-inch	2.65	2.35
1¼-inch nut	2.75	2.45
Slack	2.05	1.60

	Ohio	
At Chicago—	Pgh.	No. 8
Mine-run	$3.05	$2.75
¼-inch	3.15	2.85
1¼-inch nut	3.25	2.95
Slack	2.55	2.20

MERCHANT PIPE.

Base discounts, car load lots, subject to the usual variation of 5 per cent:

	Black Butt.	Black Lap.	Galvanized Butt.	Galvanized Lap.
⅛, ¼ inch	73	..	53	..
⅜ inch	74	..	64	..
½ inch	77	..	67	..
¾ to 1½ inch	80	..	72	..
2 inch	81	77	74	70
2½ to 3 inch	81	79	74	72
3½ to 6 inch	..	78	..	70
7 to 12 inch	..	76	..	66
Extra strong plain ends—				
⅛ to ⅜ inch	70	..	60	..
½ inch	75	..	69	..
¾ to 1½ inch	79	..	73	..
2 inch	80	76	74	70
2½ to 4 inches	..	78	..	72
4½ to 6 inches	..	77	..	71
7 to 8 inches	..	70	..	60
9 to 12 inches	..	65	..	55

The above steel pipe discounts are for "card weight." Less than carloads to destinations east of the Mississippi, two points lower.

WROUGHT IRON PIPE.

Full weight genuine wrought iron pipe car load prices to consumers; prices to jobbers one point and 5 per cent.

	Butt. Black	Butt. Galv.	Lap. Black	Lap. Galv.
⅛, ¼ inch	68	48	..	..
⅜ inch	68	58	..	..
½ inch	71	61	..	..
¾ to 1½	75	67	..	..
2 and 2½ inch	76	69	..	..
2 inch	..	..	71	63
2½ to 4 inch	..	..	74	67
4½ to 6 inch	..	..	73	65
7 to 12 inch	..	..	71	61

Extra Strong Plain Ends.

	Butt.	Butt.	Lap.	Lap.
⅛, ¼, ⅜ inch	65	55	..	..
½ inch	70	64	..	..
¾ to 1½ inch	74	68	..	..
2 and 2½ inch	75	69	..	..
2 inch	..	..	71	65
2½ to 4 inch	..	..	73	67
4½ to 6 inch	..	..	72	66
7 to 8 inch	..	..	65	55
9 to 12 inch	..	..	60	50

Double Extra Strong Plain Ends.

½ inch	60	54	..	..
¾ to 1½ inch	63	57	..	..
2 and 2½ inch	65	59	..	..
2 inch	..	..	61	55
2½ to 4 inch	..	..	63	57
4½ to to 6 inch	..	..	62	56
7 and 8 inch	..	..	55	45

MERCHANT STEEL.

Cold rolled and ground shafting, 55 per cent off, car load lots; 50 per cent off less than car load lots; delivered in base territory:

Planished tire steel	$1.30@1.40
Iron finish, up to 1½x½ in.	1.35@1.45
Iron finish, 1½x½ in. and over	1.20@1.30
Toe calk steel	1.70@1.80
Railway spring steel	1.70@1.80
Cutter shoe	1.95@2.05
Flat sleigh shoe	1.55@1.65
Crucible tool steel	7.00@8.00
Open hearth spring steel	2.05@2.30

Freight Rates on Pig Iron, Finished Steel, Coal and Coke

PIG IRON.

Pig iron, from Virginia furnaces to	Pgh.	Cin.	St. L.	Chi.	Phil.	N. Y.	Bos.
Shenandoah	$2.50	$2.35	$3.60	$3.20	$2.35	$3.30	$3.35
Bristol	4.35		3.75	4.10	3.60	4.55	4.60
Buena Vista and Roanoke	2.90	2.35	3.60	3.20	3.00	3.95	4.00
Kayula, Ivanhoe, Rural Retreat	2.90	2.35	3.60	3.20	3.40	4.35	4.40
Pulaski, E. Radford, Max Meadows.	2.90	2.35	3.60	3.20	3.25	4.20	4.25

Pig iron from Birmingham, Ala., tons of 2,240 lbs., to—	
Boston, by water	$4.60
Chicago	4.35
Cincinnati and Ohio river	3.25
Cleveland	4.35
Milwaukee and Northwest	4.75
New York, all rail	5.95
New York, rail and water	4.25
Philadelphia, all rail	5.00
Philadelphia, rail and water	4.00
Pittsburgh	4.90
St. Louis	3.75
To Pittsburgh from—	
Dunbar furnaces	.85
Kittanning furnaces	.60
Scottdale furnaces	.85
Valley furnaces	.90
Wheeling	.90
Valley furnaces to—	
Cleveland	.90

PIG IRON AND BILLETS.

Pittsburgh to	Pig iron.	Billets.
Baltimore	$2.15	$2.30
Buffalo	1.75	1.80
Boston	2.85	3.00
Chicago	2.80	3.00
Cincinnati	2.20	2.40
Cleveland	1.40	1.50
Columbus	1.60	1.90
Dayton	1.85	2.20
Detroit	2.15	2.25
Erie, Pa.	1.40	1.50
Indianapolis	2.20	2.65
Louisville, Ky.	2.80	3.00
New York	2.45	2.60
Philadelphia	2.25	2.40
Portsmouth, O.	2.10	2.50
Rochester	1.80	1.90
Richmond, Va.	2.65	2.80
Syracuse	2.10	2.20
St. Louis	3.50	3.80
Steubenville	.80	.90
Toledo	1.75	1.95
Wheeling, W. Va.	.90	1.00
Youngstown	.90	1.00
To Pittsburgh from—		
Mahoning and Shenango valleys	1.00	
Wheeling	1.00	

COKE.

From Connellsville region, per 2,000 pounds, to—	Fur.	Fdry.
Buffalo	$1.65	$1.90
Baltimore		2.15
Cleveland		1.65
Columbus		1.65
Cincinnati		2.10
Chicago		2.50
East St. Louis		2.80
Hamilton, Ont.		2.20
Joliet		2.65
Louisville		2.65
New York		2.85
Pittsburgh	.75	.80
Philadelphia		2.15
Richmond, Va.		2.95
Toledo	1.95	2.25
Valley furnaces	1.35	
Milwaukee	2.55	2.75
Detroit	2.10	2.25

TIN PLATE.

Per 100 lbs., Pittsburgh to—	C.L.	L.C.L.
Boston, Mass	18	21
Albany, N. Y.	16	19
Baltimore, Md.	14½	17½
Birmingham, Ala.	41	68
Cleveland, O.	10	13
Columbus, O.	12	15
Cincinnati, O.	15	18
Concord, N. H.	18	21
Charlotte, N. C.	39	61
Charleston, S. C.	33	70
Charleston, rail and water.	23½	31
Covington, Ky.	15	18
Chattanooga, Tenn.	33	65
Chicago, Ill.	18	21
Canadaigua, N. Y.	13½	16
Des Moines, Ia.	37½	48½
Detroit, Mich.	15	18
Denver, Colo.	84	1.18
Dover, Del.	17	20
Buffalo, N. Y.	11	13
East St. Louis	22½	26
Hartford, Conn.	18	21
Indianapolis, Ind.	17	19½
Louisville, Ky.	18	21
Montpelier, Vt.	21	24
Minneapolis, Minn.	32	42
New York	16	19
Norfolk, Va.	20	24
Natchez, Miss.	32	61
Portland, Me.	18	21
Providence, R. I.	18	21
Philadelphia, Pa.	15	18
Richmond, Va.	20	24
Rochester, N. Y.	11½	13½
Syracuse, N. Y.	13½	16
St. Louis, Mo.	22½	26
Terre Haute, Ind.	18	21
Topeka, Kan.	54½	68
Trenton, N. J.	16	19

FINISHED PRODUCTS.

Finished steel products, including plates, structural shapes, merchant steel and iron bars, skelp, pipe, fittings, hoop and cotton ties, plain and galvanized wire nails, rivets, spikes and bolts (in kegs), black plates, except planished, chain, etc., per 100 lbs.:

Pittsburgh to—	
Albany	.16
Buffalo	.11
Boston	.18
Baltimore	.14½
Canadaigua	.13½
Cleveland	.10
Columbus	.13
Cincinnati	.15
Chicago	.18
Harrisburg	.14½
Louisville	.18
New York	.16
Norfolk	.20
Philadelphia	.15
Rochester	.11½
Richmond	.20
Scranton	.15
St. Louis	.23
Washington	.14½
To Pittsburgh from—	
Mahoning and Shenango valleys	.05
Wheeling	.05

COAL.

Coal rates from mines—			
To Ashtabula	$1.00		
To Allegheny, Pan Handle Ft. Wayne tracks	.43		
To Allegheny, West Penn tracks	.48		
To Allegheny, B. & O.	.35		
To Pittsburgh, P. R. R. Main Line.	.40		
To Pittsburgh, B. & A. V. Div.	.48		
To Pittsburgh, B. & O.	.73		
To Valleys	.70		
To Buffalo	1.25		
To Cleveland	1.00		
To Detroit	1.40		
To Chicago	1.90		
To New York, gross ton	2.25		
To Philadelphia, gross ton	2.00		
From Freeport—			
To Buffalo	1.10		
For Lake shipments—	Cargo.	Fuel.	
To Ashtabula	.88	.98	
To Cleveland	.88	.98	
To Erie	.88	.98	
West Virginia rates from mines—			
To Chicago	1.90		
To seaboard points, gross ton	1.80		
From No. 8, f Ohio—			
To Cleveland	.98		
To Chicago	1.65		
To Detroit	1.15		

New Construction and Extensions

Iron and Steel.

Martins Ferry, O.—Contractors have started rebuilding sheet and pair furnaces which were torn down at the Whitaker Glessner sheet mill several days ago, and the other improvements are also progressing. New foundation for the engines is being built. It is probable that the resumption will take place the latter part of February.

St. Louis, Mo.—Rudolph Volk, 811 Park avenue, St. Louis, has prepared plans for plant addition for Christopher & Simpson, Architectural Iron & Foundry Company, William S. Simpson, president, and J. A. Christopher, vice president, Eighth and Park avenue, St. Louis. Bids close January 15. Building one-story, 106x100, brick and steel. Cost $100,000.

Dayton, O.—Dayton Steel Construction Company will build structural steel plant and warehouse on West National avenue from private plans. Main building will be one-story, 80x210, brick and steel fireproof construction; warehouse 45x90. A five-ton electric traveling crane will be installed in addition to electrical plant, etc.

Washington, D. C.—Pittsburgh Testing Laboratory has been awarded contract for testing mill, shop and field inspection of steel and iron to be used in the new building for the Bureau of Engraving and Printing. Their bid was $1,960.

Boston, Mass.—Charter was granted Boston Iron works with $100,000 capital. Moses Mishel and Maurice Caro are among the incorporators. Firm will deal in scrap iron.

Ellwood City, Pa. — American Steel Company, Park building, Pittsburgh, has taken possession of old McCrory wire nail plant here, and is installing 16 nail machines. Company has purchased ground adjoining McCrory building, on which to erect wire drawing plant.

Troy, N. Y.—I. Townsend Burden, head of the Burden Iron works announces that the company will enlarge its plant and double its capacity at once.

Boilers, Power Plants, Etc.

Des Moines, Ia.—Carr & Adams Company, door and sash manufacturers, 301 South Ninth street, have plans completed for rebuilding plant; will install steam power plant coming summer, about 200 horsepower. Building two stories, 60x128. Cost $15,000.

Warehouses, Business Bldgs.

Cincinnati.—Architect Harry Hake let separate contracts for the erection of a three-story fireproof office building for the Globe-Wernicke Company, at Norwood. It will be 200x40 feet.

Cleveland, O.—Contractors John Gill & Sons, 1301 Citizens building, are taking sub-bids on constructing a 14-story fireproof publishing building on Superior avenue and Fifth street for Leader Publishing Company. Cost $1,000,000.

East Liverpool, O. — Architects Shattuck & Hussey, of Chicago, and C. M. Metch, have plans in progress for a brick building, to be constructed on Fifth street, for the Y. M. C. A. Cost $100,000. Will be ready for bids about February 15th.

Cleveland, O.—C. L. Briggs, 85 Dick avenue, Akron, has the general contract for the new publishing house of the Scripps-McRea League to be built on East Ninth and Rockwell street. The building will be three stories, built of brick and reinforced concrete.

Foundry and Machine.

Wheeling, W. Va.—The Lorain Coal & Dock Company will shortly start work on a steel building at Blaine Works, in which will be located a modern blacksmith shop and machine shop.

Cleveland, O. — J. C. Campbell, 2202 E. 84th street, received the contract for constructing a two-story brick and steel machine shop on Central avenue for the Perfection Spring Company. Cost $30,000.

Machinery and Tools.

St. Joseph, Mo.—American Electric Company is having preliminary plans prepared by E. L. Platt, St. Joseph, for a new factory building.

Cherrytree, Pa. — Foundations have been started for a one-story frame factory to be erected for the Thermal Motor Company.

Cincinnati, O.—The Modern Machine Tool Company, a new corporation, with a charter for making turret lathes, leased part of the former quarters of the Kern Machine Tool Company, 4657 and 4659 Spring Grove avenue. New tenant will improve property. Kern Company has removed to Hamilton, O.

Hardware, Sheet Metal, Etc.

Uniontown, Pa. — Model Typewriter Company, George H. Bruder, president, is to be furnished site for new plant by Uniontown Chamber of Commerce. Company's plant is now located at Harrisburg, Pa. Stock subscription by Uniontown business men induced officials to remove.

Detroit. — Michigan Stamping Company has plans completed for addition to plant here.

Concrete, Brick, Clay.

Sharon, Pa.—Rose State Line Brick Plant has been taken over by W. C. Taylor as trustee. The company will manufacture shale block and face brick. Additional kilns are to be built and improvements are to be made immediately.

Mercer, Pa.—Mercer Board of Trade is considering proposals for erection of new tile works here. Address secretary, Board of Trade.

Logan, O. — Hocking Valley Brick Company, recently purchased the plant of the Logan Brick Manufacturing Company and contemplates making a number of improvements to same. The Logan plant has not been operated for several years but as soon as it is placed in better condition the new owners will resume the manufacture of paving brick.

Tiffin, O.—Architect George Netcher has plans in progress for a one-story and steel pottery addition to be erected for the Great Western Pottery Company, to cost $3,000.

Waynesboro, Pa. — A. R. Warner, of Waynesboro, will build a brick plant on the J. R. Funk farm near here. Contract for machinery has been taken.

Bridge; Structural; Ironwork

Dayton, O. — The city authorities contemplate the building of a steel girder bridge 55 feet long, 60 feet wide, work on which will be commenced in spring. Fred J. Collarius is the city engineer.

Coal Mining, Coke, Etc.

Moundsville, W. Va.—Contractor R. J. McCadden, this city, has contract for new equipment and machinery at Ben Franklin Coal mines, south of city.

Charleston, W. Va. — Architect David Dick, 24 Citizens Bank building, has plans in progress for a two- and four-story brick, steel and reinforced concrete store and office building addition, for Graham Coal & Realty Company; cost $20,000.

Railroad Structures.

Sandusky, O.—Lake Shore Electric Company will build a car barn addition of brick or reinforced concrete at a cost of $10,000 or $12,000. In this building a

car painting establishment will be installed. Company's shops are to be centralized here.

Public Works; Municipal, Etc.

Akron, O. — Architects Harpster & Bliss, Nantucket building, awarded to the Diamond Construction Company, the contract for constructing a two-story brick and reinforced concrete school building at East Akron for the Board of Education. Cost $60,000.

Bellaire, O.—Architects C. C. & A. L. Thayer, of New Castle, awarded to W. J. McClain, Jr., 3764 Tallman street, the contract for constructing a 2½-story brick fireproof school building on Gravel Hill, for the Board of Education. Building will contain 16 rooms.

Cleveland, O.—Architect F. S. Barnum awarded the following contracts for constructing a two-story brick and reinforced concrete school building on Hill, Commercial and Harrison streets, for the Boad of Education.

Hooverville, Pa. — The Hooversville Water Company, now being organized, will erect a water supply system, plans for which are in the hands of O. I. Thomas, Lincoln building, Johnstown, Pa.

Louisville, Ky.—Falls City Construction Company, Louisville, is low bidder on new city hospital, at $819,753, work to be completed in 550 days. D. X. Murphy & Brother, architects.

Columbus, O.—Franklin county commissioners sold $60,000 bridge bonds.

Newark, O.—Newly installed city government will consider improvements to present municipal water works system.

Lebanon, O.—J. A. Kilpatrick discussed plans for increasing the municipal water and electric plant one-third in capacity before the city authorities.

Williamsport, Md.—Preliminary steps for installation of a waterworks plant in Williamsport were taken; W. D. Byron, mayor. Cost $25,000.

Toledo, O. — Director of Public Service awarded to East Iron Machine Company, Lima, O., contract for constructing municipal asphalt plant, to cost $9,000.

Henderson, Ky. — Steps were taken by town council looking to construction of a filtration plant for the city of Henderson.

Miscellaneous.

Cleveland, O.—Architects Keller & Richter, Schofield building, awarded to John Forschner, 3516 Walton avenue, Southwest, the contract for erecting a one and two-story brick slaughter house on West Sixty-fifth for the Retail Butchers' Protective Association. Cost $18,000.

Hamilton, O. — The Sterling Paper Company has commissioned Architect D. J. Albertson, East Main street, Kalamazoo, Mich., to prepare plans for an addition to its plant. The building will be three and five stories high, 60x180 feet, built of brick or concrete. Bids will close January 30.

Utica, Ohio—The Advance Glass Company contemplates the erection of a new plant either at Utica or Newark, O. The building will likely be one-story structure steel.

Moundsville, W. Va.—To provide for increase to capacity of plant by installing 14 new furnaces, directors of the Fostoria Glass Company increased capital stock to $1,000,000. The new stock will be placed on the market within a short time and the majority of it will be taken by the present stockholders.

W. A. B. Dalzell, Moundsville, president; A. C. Scroggins, secretary-treasurer.

Clarksburg, W. Va.—John Dunkin and Ralph Jones, Bridgeport, O., are projectors of a company to build lamp chimney factory at Clarksburg.

Williamsport, Pa. — Valentine C. Lupert, of South Williamsport, has purchased ground adjoining his factory, covering a complete block, for plant additions.

Pittsburgh. — Contractor D. T. Riffle has started excavations for a six-story brick manufacturing plant, to be constructed in Forbes street, for T. J. Keenan, to cost $55,000.

St. Louis, Mo.—Barge line committee of the St. Louis Real Estate Exchange has started campaign to raise $50,000 for barge line project. W. J. Holbrook, chairman of committee; G. B. O'Reilly, president of the exchange.

Charters to New Corporations.

West Virginia.

Billings Process Company, Birmingham, Ala., to manufacture and deal in iron, steel, coal; etc.; $1,000,000; divided into 10,000 shares of $100 each. James R. Offield, Albert H. Groves, Joyce M. Lutz, Samuel N. Pond and Frank L. Belknaj, all of 1228 Monadnock building, Chicago.

West Virginia - Pittsburgh Coal Company, Wellsburg, W. Va., to mine coal in Cross Creek district of Brooke county, West Virginia; $10,000. James S. McFadyen, Harvey N. Dauler, W. Murray Carr, Chester G. Fisher and J. Edward Fawell, all of Pittsburgh.

Cochran Manufacturing Company, Hundred, W. Va., to manufacture the George T. Cochran churn, etc.; $25,000. G. W. Hixenbaugh, A. F. Gilmer, F. M. Arnett, G. T. Cochran, E. E. Kuhn and others, all of Hundred, W. Va.

Peoples Electric Light, Ice & Water Power Plants, manufacture ice from water process or other process and selling same; buy and own such patents; Weston, W. Va.; $100,000. M. S. Holt, J. M. Foster, George A. Hetzel, Charles M. Snaith, Ross L. King, A. M. Smith, W. G. Bodkin, Weston, W. Va.

Humphreys Coal Company, principal offices in Philadelphia, to mine coal and manufacture coke; $10,000. William J. Faux, Guy L. Wheaton, of Philadelphia; I. A. Boucher, of Beaverdale, Pa.; D. Perry Stanton, of New York; John E. Evans, of Evansburg, Pa.

The R. J. R. S. Oil & Gas Company, of Parkersburg, to operate for oils and gas; $5,000. S. B. Stiles, R. G. Stiles, F. H. Rexroad, of Parkersburg; R. F. Roose, of Eaton; W. H. Jonas, of Petroleum.

Try a Want or For Sale ad in the INDUSTRIAL WORLD.

Pennsylvania.

Pittsburgh Hardwood Door Company, Pittsburgh, capital increased from $50,000 to $100,000. J. W. Jones, secretary.

Finley Company, Scranton, Pa., indebtedness increased from nothing to $60,000. T. J. Lavin, secretary.

Pittsburgh Writing Machine Company, Pittsburgh, increase of bonded or mortgage indebtedness from nothing to $100,000. William Kaufman, secretary.

Lacoe & Shiffer Coal Company, Pittston, Pa., capital reduced from $60,000 to $20,000. John W. Berry, treasurer.

Harris Boom Company, Shohola Pike county, Pa.; $5,000; construction of dams, driving and floating of saw logs, lumber and timber on and over the same. W. A. May, Scranton, E. M. Beyers, Reese H. Harris, all of Scranton.

Johnston Brokerage Co., Pittsburgh; $25,000; buying and selling window glass as brokers on commission, maintain and operate warehouses, etc. J. R. Johnston, A. J. Kerin and N. M. Johnston, all of Pittsburgh.

Duplex Electric Manufacturing Company, Pittsburgh; $10,000; manufacture and sale of electric supplies and general manufacturing business. Hugo Schoenfeld, 703 Washington street, Northside, Pittsburgh; Theodore Segelbaum, Sheridan avenue, Pittsburgh; and A. I. Levaur, 2049 Murray avenue, Pittsburgh.

Fireproof Materials Company, Pittsburgh; $10,000; producing and erecting manufactured metal and mineral products, for fireproofing buildings and other structures. D. S. Donahue, Paul H. Donahue, of Pittsburgh; O. D. Kaiser, Youngstown, Ohio.

Allen Engine Company, Philadelphia; $10,000; manufacturing contractors' machinery, etc. Robert E. Ross, 2012 N

[illegible] street, Harry Crosscup, 5141 Keyser street; Howard S. Baker, 2119 N. [illegible] street, all of Philadelphia.

Cornplanter Refining Company, Warren, Pa., capital increased from $450,000 to $700,000. W. F. Messner, secretary.

Avormore Electric Company, Pittsburgh; $5,000; supply of light, heat and power or any of them by electricity to the public of Avonmore, Westmoreland county. H. L. Mitchell, 2061 Murray avenue, Pittsburgh; U. W. Tinker, 217 South Dallas avenue, Pittsburgh; Thomas S. Henderson, 1808 Brownsville road, Carrick, Pa.

Wilkes-Barre Indicator Company, Wilkes-Barre; $25,000; manufacture and sale of an office and door indicator patented by Lewis E. Webster. Lewis E. Webster, Wilkes-Barre, Pa.; A. F. Maguire, Plains, Pa.; Thomas Pestak, Luzerne Borough, Pa.; James T. Brennan, Wilkes-Barre.

American Motor Parts Company, Philadelphia; $10,000; manufacturing, selling, dealing in all kinds of machinery, machinery supplies and specialties. Charles Adsit Magruder, Bryn Mawr, Pa.; Wilson D. Craig Wright, 2023 Walnut street, Philadelphia; Ralph S. Allen, Dayton, O.; E. Hillis Larkin, St. Louis, Mo.; James M. Smith, 5138 Ludlow street, Philadelphia.

Four Wheel Auto-Jack Company, Reading, Pa.; $5,000; sale of automobiles, motor and dirigible vehicles and parts of same. F. W. Unger, E. D. Unger, C. C. Mays, all of Reading.

Topton Foundry Company, Topton, Berks County, Pa.; $5,000; manufacture of iron or steel or both or of other metal castings, forgings, boilers, radiators, [illegible] Keppelman, Theodore M. Keppelman, Cora C. Mays, Reading, Pa.

Chartiers Mining Company, Pittsburgh; $5,000; mining coal and other minerals found in or upon land acquired by the company. J. T. Stoneroad, Pittsburgh; R. P. Burgan, Carnegie, Pa.; J. H. Sanford, Carnegie, Pa.

Schrager Coal Company, Philadelphia; $10,000; mining, manufacturing, washing, preparing for market, coal briquettes and coal products. Leon Schrager, Jermyn, county of Lackawanna, Pa.; George S. Capelle, Jr., 1321 Gilpin avenue, Wilmington, Del.; Gregory C. Kelly, 141 West Springfield avenue, Chestnut Hill, Philadelphia.

Franklin Construction Company, Philadelphia; $15,000; contracting, grading, curbing, paving; all kinds of buildings, bridges, railroads, etc. C. Middleton Carlin, 3614 North Fifth street; John W. White, 1855 North Twenty-first street; John J. Smith, 3736 North Eighth street, all of Philadelphia.

Turbut Township Electric Company, Sunbury, Pa.; $5,000; supplying light, heat and power by means of electricity. R. V. West, L. K. Bingaman, T. H. Hutchinson, all of Sunbury, Pa.

Alvord Reamer Company, Millersburg, Pa.; $20,000; manufacturing reamers, taps, dies, counter-bores, milling cutters and drills, etc. Warren L. Mark, A. G. Bashoar, Jacob M. Alvord, William P. Mills, all of Millersburg, Pa.

Pittsburgh, Allegheny & McKees Rocks Railroad Company, capital increased from $75,000 to $95,000. F. M. Garland, treasurer.

Irwin-Herminie Traction Company, Irwin, Pa.; indebtedness increased from nothing to $500,000. F. W. Taylor, secretary.

Slate Belt Electric Street Railway Company, Pen Argyl, Pa., indebtedness increased from $337,000 to $402,000. Hubert E. Rogers, secretary.

Salina Fire Brick Company, Greensburg, Pa., indebtedness increased from nothing to $300,000. E. S. Naey, secretary.

Grove City Wire Novelty Company, Grove City, Pa., capital increased from $6,000 to $30,000. F. W. Pizor, secretary.

Lancaster Electric Supply & Construction Company, Lancaster, capital increased from $10,000 to $30,000. John E. Hess, secretary.

E. J. Spangler Company, Philadelphia, indebtedness increased from nothing to $30,000. Walter D. Bonsall, secretary.

Massachusetts.

Stone & Andrew, Incorporated, Boston; manufacturers of machinery and tools; $25,000. John A. Andrew, D. Robert Stone, Charles A. Ectey, 49 Federal street, Boston.

Bay State Tool Handle Company, Worcester; manufacturers of tool handles; $10,000: Daniel W. Lincoln 360 Main street, Eugene C. L. Morse, 9 Main street, Annie L. Dyke, 136 West Boylston street, Worcester.

New Jersey.

Thermo-Stove Company, Plainfield, N. J., to manufacture stoves; $100,000. G. H. Hewitt, T. E. Johnstone, Plainfield; J. H. Goodrich, Scotch Plains, N. J.

The American Hydro-Aeroplane Company, Camden, N. J.; manufacturing hydro-aeroplanes; $100,000. Edward R. Brown, Louis E. Corner, William B. McDonald, all of Philadelphia.

J. W. Pierson Company, East Orange, N. J.; deal in coal, iron, etc.; $100,000. James Willis Pierson, Cornelia D. Pierson, Glenridge M. DeForrest Soverel, East Orange, N. J.

St. Louis Nail & Supply Company,

Wanted, For Sale, Bargains.

Want and For Sale advertisements published in these columns, one cent a word. No advertisement taken less than 25 cents.

WANTED

WANTED— 1 yard crane, about 75-foot span, 220 volt, 10-ton lift, with about 300 feet of runway. Address Industrial World, Box 10-A, 108 Smithfield St., Pittsburgh, Pa.

WANTED—New or second-hand equipment as follows:
One 12" or 14" engine lathe, with 12-foot bed, for automobile work and general use.
One 16" or 18" engine lathe, for heavy work, to take automobile axles.
One 20" upright drill complete.
One radial drill, for use on frame work, largest hole to be bored, estimated at 1¼".
One 25 H. P. twin cylinder gas engine.
One 25 kw. generator.
One electric drill (hand work).
One 16" or 18" lathe, 8-foot bed, to take about 5 feet between centers. Combination rest; power cross feed; back geared and hollow spindle.
One 22" or 24" drill press.
One 20" drill press, both hand and power feed.
One 24"x36" slide valve engine (left hand).
One 20"x36" Corliss engine (left hand).
One 600 H. P. Corcoran water heater (open type).
Address H, care Industrial World, Pittsburgh, Pa.

WANTED — Inquiries to purchase or sell iron, steel, metals, machinery, contractors' equipment, iron buildings, and bridges. Address Thomas J. Pope, 59 Beekman street, New York.

POSITIONS WANTED

WANTED—Clean-cut Young Man, 24 years old, of good habits, appearance and address, exceptional ability and ambition, desires to connect with a first-class concern as an all-around man, for either inside or outside work. Opportunity desired more than salary at present. Has technical and clerical experience as a draftsman and estimator, also spent some time in sales department as correspondence clerk and sales duties, with reputable concerns; excellent references. Address B, care Industrial World, Pittsburgh, Pa.

Want and For Sale advertisements published in these columns, one cent a word. No advertisement taken less than 25 cents.

ASSISTANTS WANTED

WANTED—Assistant Purchasing Agent who has had experience in the iron and steel business. State experience, where last employed and salary expected. Address Box C, care Industrial World, Pittsburgh, Pa.

WANTED—Assistant Superintendent of Machine Department. One who has had experience in the building of engines and rolling mill machinery. State experience, where last employed and salary expected. Address Box D., care Industrial World, Pittsburgh, Pa.

WANTED — Salesman for Cement Coated Wire Nails. Must have had experience. Give reference, name and salary. All communications strictly confidential. American Steel Company, Park Building, Pittsburgh, Pa.

FOR SALE

FOR SALE—240 acres of pink dolomite limestone, along the Baltimore & Ohio Railroad. For further information, call or write to G. W. Engle, Charles-Town, Jefferson county, W. Va.

FOR SALE—The drawings and patterns of a line of metal working machinery, sufficient to equip completely, Steel Plants, Rolling Mills, Tube Mills, Spring Works, Bridge Works, Boiler Shops, and Plate-Glass Plants. The engineering and selling talent also is available. Address Engineer, care the Industrial World, 108 Smithfield street, Pittsburgh, Pa.

HYDRAULIC WHEEL PRESSES
29 Sizes. Capacities 50 to 400 tons
AIR COOLED AIR COMPRESSORS
6 Sizes. Capacities 4 cubic feet to 25 cubic feet.
Write for catalogues and prices.

Jersey City; manufacture nails; $50,000. B. S. Mantz, L. H. Gunther, John R. Turner, all of No. 15 Exchange Place, Jersey City.

Macon & Atlanta Construction Company, Jersey City; construct railways, docks, harbors, piers, wharves, etc.; $125,000. William Tusch, 103 Orange avenue, Cranford; Harry N. Davis, 321 High street, Newark, N. J.; Paul A. Shipman, 2110 Eighty-second street, Brooklyn, N. Y.

James T. Cox, Paterson, N. J.; manufacture plumbers' supplies; $50,000. James T. Cox, 187 Fair street, Paterson, N. J. Elizabeth Cox, 282 Hamilton avenue, Abram R. Vandervoort, 356 East Eighteenth street, Paterson, N. J.

Shoe Cleaning Machine Company, of New Jersey, Newark; operate shoe cleaning machines, slot machines, etc.; $40,000. Charles A. Kelley, Edward Daniels, Jr., J. F. Bartholmew, all of Newark.

Ohio.

Toledo Steel Spring Company, Toledo; $50,000; 1,000 shares of $50 each; nut locks, washers, bolts, nuts, metal railroad ties, springs, tools, machinery and fittings. C. S. Davis, N. O. Winter, F. Schreiner, Warren J. Duffy and John N. Ormond.

Foote & Davis Company, Cleveland; weather strips and screens, wholesale and retail; $10,000; 100 shares of $100 each. D. C. Foote, S. T. Davies, William Boehm, Jr., Alan S. Hopkinson and David Klein.

Humphrey Pipe & Foundry Company, Bellefontaine; foundry and machine shops; $10,000; 100 shares of $100 each; Charles S. Humphrey, Harry H. Morrow, Nellie D. Morrow, F. D. Batch and Eva D. Humphrey.

Chillicothe Hardware Company, Chillicothe; increase of capital stock from $25,000 to $50,000; 500 shares of $100 each. David N. Roche, president, and Forest C. Secrest, secretary.

Scientific Heater Company, Cleveland; increase of capital stock from $10,000 to $50,000; 500 shares of $100 each; O. J Kennhold, president, and H. H. Nicholis, secretary.

The Barston Company, Cincinnati; manufacturing sensitized celluloid, paper, porcelain, glass, &c.; $100,000; 1,000 shares of $100 each; John Quack, Edwin E. Kellogg, Charles G. Merrell, J. C. Hussey, Jr., and G. H. Barnum.

United Cutlery Company, Canton; manufacturing cutlery; $25,000. Claude Feightner, Niles A. Sponseller, Perry A Crist, Fred J. Huber and W. K. Davy.

Garrison Spoke Company, Franklin; manufacturing spokes and other products used in the manufacture of vehicle wheels; $10,000. A. R. Stocker, John J. Schwartz, Elias Folk, C. S. Jackson, J. J. Wiesner and H. S. Conover.

Otis Steel Company, Cleveland; producing, smelting, treating iron, steel and other metals; $10,000. G. Bartel, H. E. Higgins, Ellis R. Diehm, C. C. Owens and W. B. Whiting.

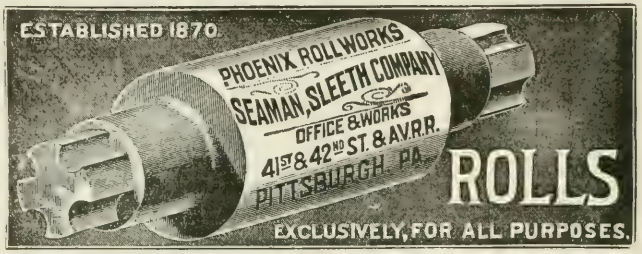
R. T. Johnston Paint Company, Cincinnati; capital increased from $55,000 to $100,000. R. T. Johnston, president; William George Johnston, secretary.

Cleveland, Randall & Eastern Railway & Power Company, Cleveland; street

RATEAU

STEAM TURBINES
A. C. & D. C. GENERATORS
BLOWERS :: PUMPS

Southwark Foundry & Machine Co.
Philadelphia, Pa.



Ask the Expert

¶ If you are having trouble with your power plant and find your power is costing more than it should, Call 3200 Grant, Contract Department, and have one of our power expert help you solve the problem. His services and advice will cost you nothing.

The Allegheny County Light Co.

435 Sixth Avenue, Pittsburgh, Pa.

CUTLER-HAMMER

CRANE PANELS

Provide Every Protection for the Motors

No fuses are required and the expense and delay of renewing them is eliminated. Yet every necessary protection against overload, short circuit and failure of voltage is provided for.

This panel simplifies installation and groups all switches, protective devices, etc., in one location. Safety switches prevent accidents when inspection or repairs are made.

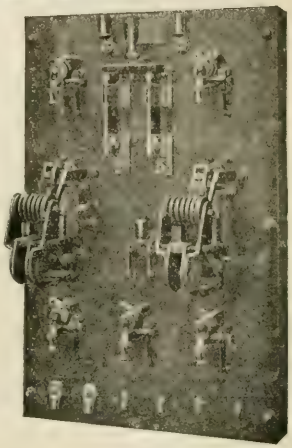
Cutler-Hammer Overloads, one of which is usually placed in each motor circuit, **can** be adjusted **without** the use of an ammeter.

On these panels two single-pole magnetic switches are used in the main line instead of a double-pole switch, because—

Should trouble cause a double-pole switch to stick, neither side of the line would be opened. But with two single-pole switches, as used on Cutler-Hammer Panels, there is practically no chance of sticking at the exact same time. Either one will open the circuit.

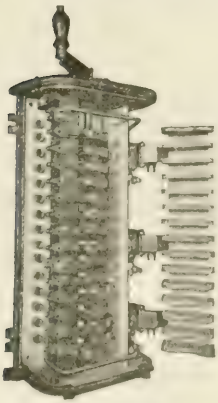
Also, if an overload remains on the line, one switch will trip and open the circuit as soon as the other closes. A double-pole switch will chatter or "telegraph."

Further particulars on request.



Crane Panel
for a three-motor crane

Drum Type Dynamic Brake
CRANE CONTROLLERS



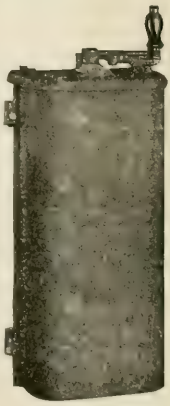
Interior view

The Cutler-Hammer new Dynamic Brake Controllers are of the enclosed type. The tight fitting drum prevents dirt, dust, etc., from falling on the current carrying parts and prevents accidents to operator and machinery, which are so liable with open type controllers in small crane cabs.

The operator has absolute control of raising and lowering. Dependable service, without delays and injuries, increases the working capacity per day.

Dynamic brake controllers insure lowering the load under perfect control, even should the power fail. No mechanical lowering brake is required.

A description of these recently developed crane controllers is contained in a new bulletin. Our nearest office will send you a copy promptly. Drop us a post card to-day.



Casing closed

THE CUTLER-HAMMER MFG. CO. MILWAUKEE

NEW YORK: Hudson Terminal, 30 Church Street CHICAGO: Peoples Gas Bldg. PITTSBURG: Farmers' Bank Building
BOSTON: 176 Federal Street PHILADELPHIA: 1201 Chestnut Street CLEVELAND: Schofield Building
PACIFIC COAST AGENTS: Otis & Squires, 579 Howard St., SAN FRANCISCO, 229 Sherlock Building, PORTLAND, ORE.
and W. B. Palmer, 416 E. 3rd St., LOS ANGELES.

railway, manufacture and sale of electricity; $10,000; R. H. Jamison, Harley S. Adams, Claude W. Shimmon, D. S. Sheet and H. W. Dickson.

Metallic Filler Company, Cleveland; building and construction materials; $10,000; B. W. Korach, Sam Kabatchnick, A. V. Kindel, George Palda and Ven Svare.

Ingle System Company, of Reading; capital increased from $100,000 to $150,000; increase to be 5,000 shares of $10 each; J. H. Schierlch, president; James W. Ingle, secretary.

Patric Furnace Company, Springfield; increase from $40,000 to $75,000; L. W. Rodgers, president; C. F. Smith, secretary.

Dayton & Troy Electric Railway Company, Dayton; increase from $1,000,000 to $1,300,000; 3,000 preferred at $100 each; Harrie P. Clegg, President; L. C Clegg, Secretary.

Big Four Clay Company, Malvern; decrease of common stock from $200,000 to $140,000. Increase of preferred stock $140,000 to $200,000.

Modern Machine Tool Company, Cincinnati; increase of capital stock, $20,000 to $70,000; 1,400 shares of $50 each; George E. Atkinson, president, and Joseph L. Logan, secretary, Cincinnati, O.

Anchor Brass & Aluminum Company, Cincinnati; metal of all kinds; $10,000; Gustav A. Wendt, George H. Wendt, Samuel Hummel, George C. Kuhn and Dwight F. Jerauld.

Continental Supply Company. Youngstown; well supplies; $1,000,000. Cecil D. Hine, James B. Kennedy, Curtis A. Manchester, Leroy A. Manchester and George B. Wick.

Missouri.

Gratiot-Wielms-Botts Construction & Realty Company, St. Louis; $10,000.

this keg means

GOOD NAILS

It is a **perfect** nail keg—note the four heavy steel hoops, the trim, symmetrical lines—and contains nails of **Jones & Laughlin quality.** Could you expect a higher recommendation than that?

We are manufacturing in our Aliquippa department nails for all purposes, common nails, galvanized nails, barbed nails, boat nails, clinch nails, shingle nails, roofing nails, staples and dowel pins.

A card to the Pittsburgh Office or the nearest agent will bring illustrated booklet "W" on J. & L. nail and wire products.

SALES OFFICES:

ATLANTA, Fourth Nat. Bank Bldg.
BOSTON, 131 State Street
BUFFALO, White Bldg.
CHICAGO, Lake and Canal Streets.
CINCINNATI, Union Trust Bldg.
CLEVELAND, Rockefeller Bldg.
DETROIT, 810 Penobscot Bldg.
NEW YORK, 165 Broadway
PHILADELPHIA, Arcade Bldg.
PITTSBURGH, Jones & Laughlin Bldg.
ST. LOUIS, Pierce Bldg.
SAN FRANCISCO, Crocker Bldg.

Jones & Laughlin Steel Company,

American Iron and Steel Works
PITTSBURGH

105

Iron, Steel and Tube Works Equipment

STEEL CASTINGS UP TO 50 TONS | SAND, CHILLED and STEEL ROLLS | CAST STEEL, MACHINE MOLDED GEARS

HIGH-SPEED STEAM-HYDRAULIC FORGING-PRESSES

Brass Castings of all Descriptions ℘ **"Vandergrift" Bronze Bearings**

UNITED ENGINEERING & FOUNDRY CO.,

2311 Farmers Bank Building, Pittsburgh, Pa.

Largest Roll Makers in the World — **Makers of the Largest Rolls**

Charles J. Gratiot, Edward P. Wielms and William P. Botts and E. S. French. To do a general contracting and real estate business.

Rector St. Louis Heating Company, of Delaware, home capital, $500,000; licensed to employ $2,000 in business in St. Louis.

Mulholland Construction Company, Kansas City; $2,000. John W. Mulholland, I. M. Mulholland, W. C. Culbertson.

Indiana.

International Pneumatic Wheel Company, Indianapolis; manufacturers; $100,000. W. H. Alford, W. S. Jackson, J. H. Dennis, Fletcher Johnson and R. R. Dennis.

Hoosier City Boiler Manufacturing Company, Marion; $100,000. J. I. Stephenson, J. M. Browcher, J. A. Sabastiani, J. M. Stephenson and M. A. Downing.

Smith Agricultural Chemical Company, Ohio; $1,000,000; certified in Indiana for $150,000, to manufacture commercial fertilizers. E. J. Smith, president

North Side Coal Company, Bicknell; producers; $10,000. Andrew Henderson, John Cheyne, Laban Tilbrook, Robert Grieve and Alexander Henderson

Salem Hardwood Lumber Company, Salem; manufacturers, $6,000. R. F. Colglazier. E. E. Loudon, H. C. Loudon and H. H. Phillips.

Mayrose-Penry Company, Terre Haute; general contractors; $10,000. J. J. Mayrose, G. M. Penry and C. G. Mayrose.

The John L. Larkin Company, Mt. Vernon, to manufacture household specialties; $5,000. J. L. Larkin, T. H. Raben, L. J. Larkin, William Frier and C. G. Dieterle.

Century Electric Company, Indianapolis; to deal in electric goods; $1,000. J. H. Wooling, James Van Natta, C. W. Mabey, H. W. Schwimmer and W. W. Spencer.

American Manufacturing Company, of Arizona, decrease of capital stock from $1,000,000 to $500,000.

Evansville, Henderson & Owensboro Railway Company, Evansville, increase of capital from $10,000 to $50,000.

Indiana Reduction Company; $200,000. H. C. Starr, Richmond; J. T. Moorman and Fred Shaw, Winchester.

Indianapolis Roofing Company, Indianapolis; dealers; $10,000. C. A. Monks, Ada Mae Monks, H. A. Fenton and W. C. Wolff.

Rockport Planing Mill Company, Rockport; $4,500. L. B. Wilkinson; Charles Wilburn and L. G. Atkinson.

Williams Busching Supply Company, Ft. Wayne; to deal in plumbers' supplies; $20,000. William Hockmeyer, William Busching, Paul Hollman and Mary Busching.

New Hygienic Refrigerator Company, Indianapolis; increase of capital from $25,000 to $50,000.

[illegible] Company, of Ohio; notice of withdrawal from State.

Rubber Regenerating Company, Mishawaka; increase of capital from $250,000 to $1,550,000

Knott Manufacturing Company, Ft.

LOCOMOTIVE CRANES

Railway Wrecking Cranes and Pile Drivers, Freight Station Transfer and Pillar Cranes, Transfer Tables.

INDUSTRIAL WORKS,
BAY CITY, :: MICHIGAN.

New York Office—50 Church Street.
George M. Newhall Engineering Company Philadelphia.
J. G. Miller, St. Louis, Mo.
F. H. Hopkins & Company, Montreal, Que.

C. O. BARTLETT AND SNOW CO.
MAKERS OF CLEVELAND, O. U. S. A.
PICKING TABLES
ELEVATORS AND CONVEYORS.

ALEX. LAUGHLIN & CO.,
Engineers & Contractors,
PITTSBURGH, PA.
Builders of Every Description of
FURNACES AND GAS PRODUCERS
—FOR—
IRON AND STEEL WORKS.

CENTRAL TUBE COMPANY
LEWIS BUILDING, Manufacturers of PITTSBURGH, PA.
WROUGHT PIPE
Eastern Representatives, Olin, Giberson & Hilands, No. 2 Rector St., New York.
Also Sales Offices in Chicago, St. Louis, and San Francisco.

Highest Grades Phosphor Bronze, Monel Metal and German Silver
IN RODS, SHEETS AND WIRE
Manufactured by SHIMER, McGLYNN & CO., Inc.
In their new and up-to-date mill. Correspondence solicited.
SHIMER & CO., Inc., Selling Agents, Bullitt Building, PHILADELPHIA, PA.
Pittsburgh Office: OLIVER BUILDING.

Wayne; increase of capital from $15,000 to $25,000.

Ft. Wayne Electric Works, of New York; notice of withdrawal from the State.

Wright Shovel Works, Anderson; reduction of capital from $10,000 to $1,000.

Delaware.

American Furnace Device Company, of Delaware; $100,000. John Bolgiano; Frank H. Shallus, and Samuel E. Pentz, all of Baltimore, Md.

Simplex Railway Appliance Company; $1,000,000. Paul A. Neuffer; William Epple; Harry H. Phillips, and Charles J. Horn, all of Chicago, and William J. Maloney, Wilmington, Del.

Pittsburgh Development Company, Wilmington, Del.: $500,000. Will E Nesbitt; William C. Nalle, and S. D. Townsend, Jr., all of Wilmington, Del.

W. C. Jones Contracting Company Capital Trust Company of Delaware; $50,000. W. C. Jones, J. Carl Darnall, Jos. J. Devine, all of Washington, D. C.

Clear Creek Coal Company, Delaware Incorporators Trust Company; $100,000. William M. Pyle, Edmund S. Hellings, Christopher L. Ward, all of Wilmington.

Muskingum Company, Delaware Charter Guarantee & Trust Company; $100,000. William W. Wishart, E. W. Jordan, Edgar M. Moore, Arthur F. Clarke, T. O. Sullivan, Pittsburgh, D. F. Collingwood, Braddock, Pa.

Clinton Water Works Company, certificate increasing capital from $125,000 to $1,500,000. The incorporators are of Pittsburgh.

Wilmington Iron & Steel Company, to deal in iron, steel, manganese and kindred products. E. C. Boyd and Eugene W. Stirlith, of Wilmington, and Henry Rosenthal, of Philadelphia. $10,000.

European Brush Machine Company, to deal in letters patent. Richard Tautenbahn and Curt J. M. Weise, of Philadelphia, and George L. Townsend, of Wilmington. $100,000.

Illinois.

Ney Brothers, Chicago; plumbing, steam and gas fitting; $15,000. John Ney, John Ney, Jr., Oscar Ney, Chicago.

Aylet Corporation, Chicago; bridge construction; $10,000. Taylor E. Brown, Clarence E. Melhope, George R. Wilkins, Chicago.

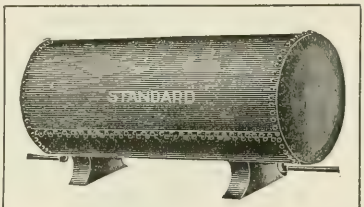
Cudahy Refining Company, Maine corporation; dealing in petroleum, oils and greases; $500,000. W. H. Isom, Harris Trust building, Chicago.

The Pennsylvania Coal & Coke Corporation proposes to electrify all its mines in Cambria, Clearfield, Blair and Indiana counties.

The Consolidation Coal Company, Fairmont, W. Va., has started the construction of one of the largest gas engine driven electrical plants in the country, and the only one of its kind in that State.

Try a Want or For Sale ad in the INDUSTRIAL WORLD.

KNOX PRESSED and WELDED
. . . STEEL COMPANY . . .
MANUFACTURERS OF ALL CLASSES OF
STEEL PLATE CONSTRUCTION - WELDED STEEL SPECIALTIES
OFFICE: FARMERS BANK BUILDING, PITTSBURGH, PA. WORKS: NILES, OHIO.
Sole manufacturers of Knox Patented Water Cooled Parts, Doors and Door Frames for Open Hearth Furnaces.



Standard Tanks for any purpose: Water, Air, Oil, Gas. We guarantee every tank absolutely tight and all openings plugged for shipment, keeping the tank clean and the tappings free from injury.

We are manufacturers of all kind of Plate Construction, Stand Pipes, Self Supporting Stacks, Accumulators and Air Receivers; also Freezing Tanks and Drip Pans for ice plants.

Write for price lists on Pneumatic Steel Tanks, Air Receivers and Oil Storage Tanks, which we carry in stock ready for immediate shipment. We can also quote you attractive prices on your special requirements.

STANDARD STEEL TANK & MFG. COMPANY
Works: Girard, O. PITTSBURGH, PA.

GALVANIZED SHEETS
CORRUGATED ROOFING, GALVANIZED OR PAINTED,
BLACK STEEL SHEETS.
McCULLOUGH IRON CO.,
MANUFACTURERS. WILMINGTON, DEL.

NEW YORK PITTSBURGH CHICAGO
OTIS ELEVATOR COMPANY
ELECTRIC AND STEAM
AUTOMATIC
Hoisting and Reversing Engines
NEW AND REFITTED. Full Description on Request

McKEEFREY & COMPANY
CONNELLSVILLE FOUNDRY
AND FURNACE COKE, FOUNDRY, FORGE
AND BESSEMER PIG IRON
LEETONIA, - - - OHIO.

BUSINESS TROUBLES

Platt Iron Works.—The assets of the Platt Iron Works Company, of Dayton, O., bankrupt, are given a total valuation of $1,726,536.02 in a report filed in the United States District Court at Cincinnati last week by the three appraisers appointed by the trustees—Arthur Giesler, A. H. Kemper and E. S. Cullen. These include an item of $259,813.57 given for collecting accounts, after deducting an approximated cost for collection of $64,953.41 from the actual book accounts, which total $324,767.08. The firm's goodwill is rated at an asset and appraised at $40,000.

The valuations given are as follows: Real estate, $105,000; buildings, $392,665; brass room, $2,730; blue-print apparatus, $800; midway, $12,335; brass foundry, $2,760; iron foundry, $3,355; coreroom, $7,605; center bay, $10,930; boiler shop, $19,835; machine shop, $58,020; machine shop No. 7, $7,635; machine shop No. 8, $3,710; machine shop No. 9, $3,105; bay south of toolroom, $5,565; machine shop No. 12, $9,510; machine shop No. 13, $3,860; test floor, $3,150; main bay at east end, $31,300; electric motors, $1,055; electric cranes, $28,400; power-house equipment, $19,530; pattern shop, $5,405; wood shop and flask shop, $1,590; yard equipment, $4,656; office and drafting-room fixtures, $6,000; photos, electros, halftones, stationery, etc., $3,000; line shafting, hangers, pulleys and belting, $10,700; patterns, flasks and drawings, $151,500; small tools, $58,400; raw, finished and partially finished stores, $371,299.40; good will, $60,000; notes receivable, $1,140.56; collectible accounts, $259,813.57, and sundry assets, $60,176.09.

Boston Auto Concern.—At Boston, last week, James L. Gillingham, was appointed receiver for the Kissel Car Company, an automobile manufacturing concern.

Failures in Iron and Machine Trades.

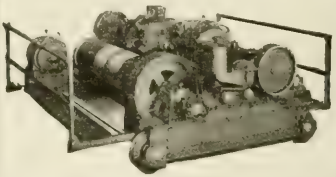
Dun's annual review gives failures in iron, steel and machinery trades in two years as follows:

1911	No.	Liabilities
Iron, foundries and nails.	61	$ 5,056,635
Machinery and tools.....	173	6,689,566
Total	234	$11,746,201
1910		
Iron, foundries and nails.	80	11,748,872
Machinery and tools.....	167	5,788,919
Total	247	$17,537,791

These classifications include all manufactures in iron and steel lines, including vehicles, shipbuilding, hardware, etc.

Roumania ministry has under consideration establishment of charcoal iron plant by the State.

UNITED STATES
Cast Iron Pipe & Foundry Company.
OPERATING 11 PLANTS.
WATER, GAS & CULVERT.
General Offices and Eastern Sales Office: 71 Broadway, New York.
PHILADELPHIA SALES OFFICE: 1421 Chestnut Street, Philadelphia, Pa.
WESTERN SALES OFFICE: 217 La Salle Street, Chicago, Ill.
SOUTHERN SALES OFFICE: Chamberlain Bldg., Chattanooga, Tenn.
PACIFIC SALES OFFICE: Monadnock Bldg., San Francisco, Calif.,
PITTSBURGH OFFICE: Henry W. Oliver Building.
Bell and Spigot Specials. Flanged Specials. Flanged Pipe. Flexible Joint Pipe.

Here's a Mill Type Trolley used on several cranes shipped to the Pittsburgh district recently. Are you interested in what is new and best in crane design? Then look up our

NORTHERN CRANES!
All Enclosed Non-Overhung Gearing
NORTHERN ENGINEERING WORKS. DETROIT, MICH. U.S.A.
E. E. BROSIUS, Agt. Machesney Bldg., Pittsburgh, Pa. Phone 3574 Court

THE MEEHAN BOILER & CONSTRUCTION COMPANY
LOWELLVILLE, OHIO.
Manufacturers and Erectors.
STEEL PLATE WORK
BLAST FURNACES
HOT BLAST STOVES
GAS WASHERS
CAR TANKS
WATER TANKS
STEEL RIVETED PIPE
SELF SUPPORTING STEEL STACKS
STAND PIPES
STORAGE TANKS

RIEHLE TESTING MACHINE,
Testing Machines for all kinds of Tests
Testing Appliances for Physical Laboratories, Marble Machines, Riehle Robie Patent Screw Jacks, etc., etc.
RIEHLE BROTHERS TESTING MACHINE COMPANY
1424 NORTH NINTH STREET, PHILADELPHIA. NEW YORK OFFICE: 120 LIBERTY STREET

The S. R. SMYTHE COMPANY,
ENGINEERS AND CONTRACTORS
Steel Works, Rolling Mills, Blast Furnaces, Hot Blast Stoves, Etc. Furnaces for All Purposes.
Gas Producers For Fuel and Power Applied for All Purposes.
House Building, ESTABLISHED 1879 PITTSBURGH, PA.

IMMEDIATE SHIPMENTS

OF

Beams, Channels, Angles, Tees, Sheared and Universal Plates, Checkered Plates, Rounds, Flats, and Squares. Plain Rounds, Squares and Cold Twisted Squares for Concrete Reinforcement.

FROM

WAVERLY WAREHOUSES, Newark, N. J.
PITTSBURG WAREHOUSE, Pittsburg, Pa.
CLEVELAND WAREHOUSE, Cleveland, O.

ADDRESS THE ONE NEAREST YOU, OR

CARNEGIE STEEL COMPANY

General Offices, Pittsburg, Pa.

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United States Steel Products Co., New York.

Pacific Coast Representatives
United States Steel Products Company
Los Angeles San Francisco
Portland Seattle

Birmingham
Boston
Buffalo
Chicago
Cincinnati

District Offices
Cleveland New York
Denver Pittsburgh
Detroit St. Louis
New Orleans St. Paul
Philadelphia

STOCK LIST SENT ON REQUEST.

Classified Index of Advertisers, Arranged for Ready Reference

ACCUMULATORS-HYDRAULIC.
Chambersburg Engineering Company .....Chambersburg, Pa.

AIR COMPRESSORS.
Baird Machinery Co.....Pittsburgh
Connellsville Mfg. & Mine Supply Company .....Connellsville, Pa.
Hall Steam Pump Co. .....Pittsburgh
Mesta Machine Co. .....Pittsburgh

AIR HOISTS.
Baird Machinery Co.....Pittsburgh
Northern Eng. Works ...Detroit, Mich.

AIR PRESSURE TANKS.
Meehan Boiler & Con. Co..Lowellville,O.
National Tube Company .....Pittsburgh
Riter-Conley Mfg. Co. .....Pittsburgh

ALUMINUM.
Aluminum Co. of America...Pittsburgh

ANGLE SHEARS.
Standard Bridge Tool Co.....Pittsburgh

ANNEALING BOXES.
Mesta Machine Co. .....Pittsburgh
Knox Pressed & Welded Steel Company .....Pittsburgh

ANNEALING BOXES, FURNACES AND OVENS.
Meehan Boiler & Con. Co .Lowellville,O.
United Eng. & Fdry Co.....Pittsburgh

ANNEALED TOOL AND DIE STEEL.
Wm. Jessop & Sons, Ltd.....New York

ARC LAMP RESISTANCES.
Cutler-Hammer Mfg. Co.....Milwaukee

ASH HANDLING MACHINERY.
C. O. Bartlett & Snow Co.....Cleveland
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

AUTOMATIC ENGINES.
Otis Elevator Company .....Pittsburgh

AXLES.
Carnegie Steel Company .....Pittsburgh

BAR STEEL.
Carnegie Steel Company .....Pittsburgh
Oswald, R. W. .....Pittsburgh

BARREL HANDLING MACHINERY
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

BATTERY CHARGING RHEOSTATS
Cutler-Hammer Mfg. Co.....Milwaukee

BEAMS.
Carnegie Steel Company .....Pittsburgh
Jones & Laughlin Steel Co....Pittsburgh
Riter-Conley Mfg. Co. .....Pittsburgh
W. N. Kratzer & Co. .....Pittsburgh

BELLS and GONGS (Seamless Steel.)
National Tube Company .....Pittsburgh

BELTING.

Baird Machinery Co.....Pittsburgh
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia
Oswald, R. W. .....Pittsburgh

BELT CONVEYORS.

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

BENDING MACHINES-HYDRAULIC

Chambersburg Engineering Company .....Chambersburg, Pa.
Standard Bridge Tool Co.....Pittsburgh

BENDING ROLLS.

Standard Bridge Tool Co.....Pittsburgh

BLAST FURNACE BRICK.

Stowe-Fuller Co. .....Cleveland, O.

BLAST FURNACES.

Riter-Conley Mfg. Co. .....Pittsburgh

BLOWER REGULATORS.

Cutler-Hammer Mfg. Co.....Milwaukee

BLOWING ENGINES.

Mackintosh, Hemphill & Co...Pittsburgh
Mesta Machine Company ....Pittsburgh
Southwark Foundry & Machine Company .....Philadelphia

BLAST FURNACE BRICK.

Kier Fire Brick Company ....Pittsburgh
Bickford Fire Brick Company..... .....Curwensville, Pa.

BOILERS.

H. J. Koontz .....Pittsburgh
Meehan Boiler & Con. Co..Lowellville,O.

BCILER FITTINGS.

National Tube Company .....Pittsburgh

BOILER TUBES.

National Tube Company .....Pittsburgh

BOILER SETTINGS.

Kier Fire Brick Company ....Pittsburgh
Bickford Fire Brick Company..... .....Curwensville, Pa.

BORING MACHINES.

Baird Machinery Co.....Pittsburgh

BRAKES (Electric.)

Cutler-Hammer Mfg. Co.....Milwaukee

BRAKE SOLENOIDS.

Cutler-Hammer Mfg. Co.....Milwaukee

BRASS AND BRONZE CASTINGS.

Mesta Machine Company ....Pittsburgh
United Eng. & Fdry Co.....Pittsburgh

BRAZING.

Linde Air Products Co., The..... .....Buffalo, N. Y.

BRIDGE AND STRUCTURAL WORK

Jones & Laughlin Steel Co....Pittsburgh
Meehan Boiler & Con. Co..Lowellville,O.
Riter-Conley Mfg. Co. .....Pittsburgh
W. N. Kratzer & Co. .....Pittsburgh

BRIDGE BUILDERS.

Riter-Conley Mfg. Co. .....Pittsburgh

BUCKETS.

Industrial Works .....Bay City, Mich.
Jeffrey Manufacturing Co..Columbus, O.

BUCKETS (Coal.)

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

BUCKETS (Ore.)

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

BUCKETS (Self Filling.)

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

BUILDING BRICK.

West Va. Fire Clay Mfg. Co..Pittsburgh

CAR FORGINGS.

Connellsville Mfg. & Mine Supply Company .....Connellsville, Pa.
Phillips Mine & Mill Supply Company .....Pittsburgh

CAR HAULS.

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CARRIERS.

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CARS (Industrial).

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CASTINGS.

Chambersburg Engineering Company .....Chambersburg, Pa.
Connellsville Mfg. & Mine Supply Company .....Connellsville, Pa.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia
Mackintosh, Hemphill & Co...Pittsburgh
McLanahan Stone Machine Company .....Hollidaysburg, Pa.
Mesta Machine Company ....Pittsburgh
United Eng. & Fdry Co.....Pittsburgh
Wheeling Mould & Fdry. Co...Wheeling
Wm. Swindell & Bros. .....Pittsburgh

CASTINGS (Malleable.)

Jeffrey Manufacturing Co..Columbus, O.

CEMENT HANDLING MACHINERY

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CENTRAL CONDENSERS.

Mesta Machine Company ....Pittsburgh
Southwark Foundry & Machine Company .....Philadelphia

CHAIN BELTING.

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia
McLanahan Stone Machine Company .....Hollidaysburg, Pa.

CHAIN DRIVES.

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CHAIN HOISTS.

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CHAINS.

Jeffrey Manufacturing Co..Columbus, O.
Jones & Laughlin Steel Co....Pittsburgh
Link-Belt Company .....Philadelphia

CHAINS (Dodge, Ewart, Ley, Monobar, Maximum, etc.)

Link-Belt Company .....Philadelphia

CHAIN SLINGS.

Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CHAIN GRATES.

American Stoker Co. .....New York

CHANNELS.

Carnegie Steel Company .....Pittsburgh
Jones & Laughlin Steel Co....Pittsburgh
W. N. Kratzer & Co. .....Pittsburgh

CHEMISTS.

Gulick-Henderson Co. .....Pittsburgh

CHROME BRICK.

Stowe-Fuller Co. .....Cleveland, O.

CIRCUIT BREAKERS.

Stowe-Fuller Co. .....Cleveland, O.

CLAPPER TYPE SWITCHES.

Cutler-Hammer Mfg. Co.....Milwaukee

CLAY MACHINERY.

Connellsville Mfg. & Mine Supply Company .....Connellsville, Pa.
Philips & McLaren Co. .....Pittsburgh

CLUTCH (Magnetic.)

Cutler-Hammer Mfg. Co.....Milwaukee

COAL.

Pittsburgh-Buffalo Co. .....Pittsburgh

COAL AND ASH HANDLING MACHINERY.

Industrial Works .....Bay City, Mich.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CUTTING.
(Sprues and Risers off Castings.)
Linde Air Products Co., The.....Buffalo, N. Y.

COAL CUTTERS.
Jeffrey Manufacturing Co..Columbus, O.

COAL DEALERS' SUPPLIES.
Standard Scale & Supply Co...Pittsburgh

COAL HAULING TIPPLES, MINING, WASHING & CRUSHING PLANTS.
C. O. Bartlett & Snow Co.....Cleveland
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

COAL AND ORE BRIDGE CONTROLLERS.
Cutler-Hammer Mfg. Co.....Milwaukee

COCKS.
National Tube Company .....Pittsburgh

COCKS (Iron Body and "High-Duty-Metal.")
National Tube Company .....Pittsburgh

COKE.
Bessemer Coke Co.....Pittsburgh
McKeefrey & Co. .....Leetonia, O.
Pittsburgh-Buffalo Co. .....Pittsburgh
Rogers, Brown & Co.....Cincinnati, O.
Shimer & Company, Inc.....Pittsburgh

COKE CHARGING CARS.
Jeffrey Manufacturing Co..Columbus, O.

COLD DRAWN STEEL SHAFTING AND SHAPES.
Jones & Laughlin Steel Co....Pittsburgh
Standard Gauge Steel Company .....Beaver Falls, Pa.

COLUMNS.
Jones & Laughlin Steel Co....Pittsburgh
Meehan Boiler & Con. Co..Lowellville, O.
W. N. Kratzer & Co. .....Pittsburgh

CONCRETE MIXERS.
Standard Scale & Supply Co...Pittsburgh

CONCRETE REINFORCEMENT.
The Consolidated Expanded Metal Co.'s .....Pittsburgh

CONDENSERS.
Mesta Machine Company ....Pittsburgh
Southwark Foundry & Machine Company .....Philadelphia

CONNECTING RODS.
Standard Gauge Steel Company .....Beaver Falls, Pa.

CONSULTING ENGINEERS.
Doubleday-Hill Electric Co..Pittsburgh.
Duff, Samuel E. .....Pittsburgh
Kennedy, Julian .....Pittsburgh
Laughlin, Alex & Co. .....Pittsburgh
Schlieper-Daae Company.....Pittsburgh
Standard Bridge Tool Co.....Pittsburgh
The S. R. Smythe Co. .....Pittsburgh
Wm. Swindell & Bros. .....Pittsburgh

CONTRACTORS.
Geo. J. Hagan .....Pittsburgh
Schlieper-Daae Company.....Pittsburgh
The S. R. Smythe Co. .....Pittsburgh
Wm. Swindell & Bros. .....Pittsburgh

CONTROLLERS (Electric.)
Cutler-Hammer Mfg. Co.....Milwaukee
Otis Elevator Company .....Pittsburgh
Doubleday-Hill Electric Co..Pittsburgh.

CONVEYORS AND ELEVATORS.
C. O. Bartlett & Snow Co.....Cleveland
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CONVEYORS (Belt.)
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CONVEYORS (Flight.)
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CONVEYORS (Screw.)
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CONVEYING MACHINERY.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CORRUGATED IRON.
McCollough Iron Co..Wilmington, Del.

COUPLINGS.
National Tube Company .....Pittsburgh

COUPLINGS (Magnetic.)
Cutler-Hammer Mfg. Co.....Milwaukee

COUPLINGS (Wrought.)
National Tube Company .....Pittsburgh
Central Tube Co. .....Pittsburgh

CRANES.
Northern Eng. Works ...Detroit, Mich.

CRANE CONTROLLERS.
Cutler-Hammer Mfg. Co.....Milwaukee

CRANES—LOCOMOTIVE.
Brown Hoisting Mach. Co...Cleveland
H. J. Koontz .....Pittsburgh
Industrial Works .....Bay City, Mich.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CRANES & HOISTING MACHINERY
Baird Machinery Co.....Pittsburgh
H. J. Koontz .....Pittsburgh
Industrial Works .....Bay City, Mich.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia
Northern Eng. Works ...Detroit, Mich.

CRANK SHAFTS.
Standard Gauge Steel Company .....Beaver Falls, Pa.

CRANE UNLOADERS.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

CRUCIBLE STEEL.
Wm. Jessop & Sons, Ltd.....New York

CRUCIBLE STEEL MELTING FURNACES.
Wm. Swindell & Bros. .....Pittsburgh

CUPOLA.
Northern Eng. Works ...Detroit, Mich.
Riter-Conley Mfg. Co. .....Pittsburgh

CUPOLA BLOCKS.
Dover Fire Brick Co.....Cleveland, O.
Stowe-Fuller Co. .....Cleveland, O.
United Fire Brick Co...Uniontown, Pa.
West Va. Fire Clay Mfg. Co..Pittsburgh

CUPOLA LININGS.
Dover Fire Brick Co.....Cleveland, O.
Stowe-Fuller Co. .....Cleveland, O.

CYLINDERS.
Mesta Machine Company ....Pittsburgh

DIE BLOCKS.
Heppenstall Forge & Knife Company .....Pittsburgh

DIRECT MOTOR DRIVES.
Crocker-Wheeler Co.....Ampere, N. J.

DISC BRAKES.
Cutler-Hammer Mfg. Co.....Milwaukee

DITCHERS.
Jeffrey Manufacturing Co..Columbus, O.

DREDGE CHAINS.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

DREDGES.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

DREDGING MACHINERY.
C. O. Bartlett & Snow Co.....Cleveland
Jeffrey Manufacturing Co..Columbus, O.

DRILLS.
Jeffrey Manufacturing Co..Columbus, O.

DRILLS FOR COAL MINES.
Jeffrey Manufacturing Co..Columbus, O.

DRIVE CHAINS.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

DRIVE WELL POINTS AND WELL SUPPLIES.
National Tube Company .....Pittsburgh

DOVETAIL ROLLS.
The Heinle Company .....Pittsburgh

DROP HAMMERS.
Chambersburg Engineering Company .....Chambersburg, Pa.

DYNAMO BRUSHES.
Cutler-Hammer Mfg. Co.....Milwaukee
Doubleday-Hill Electric Co..Pittsburgh.

DYNAMOS AND MOTORS.
Crocker-Wheeler Co.....Ampere, N. J.
H. J. Koontz .....Pittsburgh
Doubleday-Hill Electric Co..Pittsburgh.

ELECTRIC HOISTS.
Northern Eng. Works ...Detroit, Mich.
Otis Elevator Company .....Pittsburgh

ELECTRIC LIGHTING MACHIN'RY
Crocker-Wheeler Co.....Ampere, N. J.
Southwark Foundry & Machine Company .....Philadelphia

ELECTRICAL REPAIRS.
Doubleday-Hill Electric Co..Pittsburgh.

ELECTRIC LAMPS (Arc and Incandescent)
Doubleday-Hill Electric Co..Pittsburgh.

ELECTRIC LOCOMOTIVES.
Jeffrey Manufacturing Co..Columbus, O.
Northern Eng. Works ...Detroit, Mich.

ELECTRICAL SUPPLIES.
Doubleday-Hill Electric Company .... Pittsburgh, Pa.

ELEVATOR CONTROLLERS AND ACCESSORIES.
Cutler-Hammer Mfg. Co.....Milwaukee

ELEVATORS.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia
Northern Eng. Works ...Detroit, Mich.
Otis Elevator Company .....Pittsburgh

EMERY & CORUNDUM WHEELS.
Standard Scale & Supply Co...Pittsburgh

ENGINEERS.
Chambersburg Engineering Company .....Chambersburg, Pa.
Chester & Fleming .....Pittsburgh, Pa.
Duff, Samuel E. .....Pittsburgh
G. W. McClure Son & Co....Pittsburgh
Jeffrey Manufacturing Co..Columbus, O.
Kennedy, Julian .....Pittsburgh
Laughlin, Alex & Co. .....Pittsburgh
Link-Belt Company .....Philadelphia
Morgan Construction Company..... .....Worcester, Mass.
The S. R. Smythe Co. .....Pittsburgh
Schlieper Daae Company.....Pittsburgh
United Eng. & Fdry Co.....Pittsburgh
Wm. Swindell & Bros. .....Pittsburgh

ENGINEERS—INSPECTING.
Gulick-Henderson Co. .....Pittsburgh

ENGINEERS—LABORATORY.
Gulick-Henderson Co. .....Pittsburgh

ENGINEERS (Mechanical)
Schlieper Daae Company.....Pittsburgh
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

ENGINES.
Oswald, R. W. .....Pittsburgh
Otis Elevator Company .....Pittsburgh

ENGINES (Steam.)
Connellsville Mfg. & Mine Supply Company .....Connellsville, Pa.
H. J. Koontz .....Pittsburgh
Mackintosh, Hemphill & Co...Pittsburgh
Mesta Machine Company ....Pittsburgh
Southwark Foundry & Machine Company .....Philadelphia

EQUALIZING GEARS.
Jeffrey Manufacturin~ Co..Columbus, O.
Link-Belt Company .....Philadelphia

EXPANDED METAL.
The Consolidated Expanded Metal Co.'s .....Pittsburgh

EXPANSION METAL.
National Tube Company .....Pittsburgh

FAN REGULATORS.
Cutler-Hammer Mfg. Co.....Milwaukee

FEED WATER HEATERS, FILTERS AND PURIFIERS.
H. J. Koontz .....Pittsburgh

FIELD REGULATORS.
Cutler-Hammer Mfg. Co.....Milwaukee

FIRE ARCH BRICK.
Dover Fire Brick Co.....Cleveland, O.
Kier Fire Brick Company ....Pittsburgh
Bickford Fire Brick Company..... .....Curwensville, Pa.
Stowe-Fuller Co. .....Cleveland, O.

FIRE BRICK AND CLAY.
Bickford Fire Brick Company..... .....Curwensville, Pa.
Clearfield Fire Brick Co...Clearfield, Pa.
Dover Fire Brick Co.....Cleveland, O.
Kier Fire Brick Company ....Pittsburgh
Pittsburgh-Buffalo Co. .....Pittsburgh
Jos. Soisson Brick Co..Connellsville, Pa.
Sandy Ridge Fire Brick Company .....Sandy Ridge, Pa.
Stowe-Fuller Co. .....Cleveland, O.
United Fire Brick Co...Uniontown, Pa.
West Va. Fire Clay Mfg. Co..Pittsburgh

FIRE ESCAPES.
W. N. Kratzer & Co. .....Pittsburgh

FIRE PROOFING.
W. N. Kratzer & Co. .....Pittsburgh

FIRE PUMP STARTERS.
Cutler-Hammer Mfg. Co.....Milwaukee

FITTINGS.
National Tube Company .....Pittsburgh

FITTINGS (Malleable and Cast Iron.)
National Tube Company .....Pittsburgh

FLAG STAFFS.
National Tube Company .....Pittsburgh

FLANGES (Cast and Malleable.)
National Tube Company .....Pittsburgh

FLATS.
Standard Gauge Steel Company .....Beaver Falls, Pa.

FLANGING CLAMPS.
Chambersburg Engineering Company .....Chambersburg, Pa.
Standard Bridge Tool Co.....Pittsburgh

FLANGING.
Knox Pressed & Welded Steel Company .....Pittsburgh

FINISHED MACHINE KEYS.
Standard Gauge Steel Company .....Beaver Falls, Pa.

FLIGHT CONVEYORS.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

FLOAT SWITCHES.
Cutler-Hammer Mfg. Co.....Milwaukee

FORGE AND FURNACE LININGS.
Bickford Fire Brick Company..... .....Curwensville, Pa.

FORGINGS.
Carnegie Steel Company .....Pittsburgh
Heppenstall Forge & Knife Company .....Pittsburgh
Jeffrey Manufacturing Co..Columbus, O.
Mesta Machine Company ....Pittsburgh
W. N. Kratzer & Co. .....Pittsburgh

FORGINGS PRESSES.
Chambersburg Engineering Company .....Chambersburg, Pa.
Mesta Machine Co. .....Pittsburgh
United Eng. & Fdry Co.....Pittsburgh

FOUNDRY EQUIPMENTS.
Baird Machinery Co.....Pittsburgh
Meehan Boiler & Con. Co..Lowellville,O.

FOUNDRY FIRE BRICK.
Bickford Fire Brick Company..... .....Curwensville, Pa.
Dover Fire Brick Co.....Cleveland, O.
Kier Fire Brick Company ....Pittsburgh
Stowe-Fuller Co. .....Cleveland, O.

FRICTION CLUTCHES.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

FURNACES.
American Stoker Co. .....New York

FURNACE BUILDERS.
Laughlin, Alex & Co. .....Pittsburgh
Geo. J. Hagan .....Pittsburgh
G. W. McClure Son & Co....Pittsburgh
Kennedy, Julian .....Pittsburgh
Morgan Construction Company..... .....Worcester, Mass.
Schlieper-Daae Company.....Pittsburgh
The S. R. Smythe Co. .....Pittsburgh
Wm. Swindell & Bros. .....Pittsburgh

GALVANIZED SHEETS.
McCollough Iron Co..Wilmington, Del.

GAS AND GASOLINE ENGINES.
Standard Scale & Supply Co...Pittsburgh

GAS ENGINES.
Mesta Machine Company ....Pittsburgh

GAS PRODUCERS.
Geo. J. Hagan .....Pittsburgh
Laughlin, Alex & Co. .....Pittsburgh.
Morgan Construction Company.....
.....Worcester, Mass.
Riter-Conley Mfg. Co. .....Pittsburgh
Schlieper-Daae Company.....Pittsburgh
The S. R. Smythe Co. .....Pittsburgh
Wm. Swindell & Bros. .....Pittsburgh

GATE VALVES.
National Tube Company .....Pittsburgh

GEARING (Bevel, Mitre, Spur, etc.)
Link-Belt Company .....Philadelphia

GEARS.
Jeffrey Manufacturing Co..Columbus, O.
Mesta Machine Company ....Pittsburgh

GENERATORS.
Crocker-Wheeler Co.....Ampere, N. J.
Doubleday-Hill Electric Co..Pittsburgh.

GERMAN SILVER.
Shimer & Company, Inc.....Pittsburgh

GIRDERS.
DeMoines Bridge & Iron Company
..... DeMoines, Ia.

Jones & Laughlin Steel Co....Pittsburgh
Meehan Boiler & Con. Co..Lowellville,O.
W. N. Kratzer & Co. .....Pittsburgh

GLOBE VALVES.
National Tube Company .....Pittsburgh

GRAB BUCKETS.
Jeffrey Manufacturing Co..Columbus, O.

GRATES.
American Stoker Co. .....New York

GRAIN TANKS.
Standard Steel Tank & Manufacturing Company .....Pittsburgh, Pa.

GROUND FIRE CLAY.
West Va. Fire Clay Mfg. Co..Pittsburgh

GUILLOTINE SHEARS.
Standard Bridge Tool Co.....Pittsburgh

HEAD FRAMES.
Riter-Conley Mfg. Co. .....Pittsburgh

HIGH SPEED PUNCHES.
Standard Bridge Tool Co.....Pittsburgh

HOISTING ENGINES.
Otis Elevator Company .....Pittsburgh

HORIZONTAL DRILLS.
Baird Machinery Co.....Pittsburgh

HORIZONTAL PUNCHES.
Standard Bridge Tool Co.....Pittsburgh

HOT BLAST STOVE BRICK.
Stowe-Fuller Co. .....Cleveland, O.

HOT BLAST STOVES.
Bickford Fire Brick Company.....
.....Curwensville, Pa.
G. W. McClure Son & Co....Pittsburgh

HOT METAL CARS.
Meehan Boiler & Con. Co..Lowellville,O.

HYDRAULIC ENGINEERS.
Chester & Fleming .....Pittsburgh, Pa.

HYDRAULIC MACHINERY.
Baird Machinery Co.....Pittsburgh
Chambersburg Engineering Company .....Chambersburg, Pa.
Mesta Machine Company ....Pittsburgh

HYDRAULIC PUMPS.
Chambersburg Engineering Company .....Chambersburg, Pa.

HYDRAULIC VALVES AND FITTINGS.
Chambersburg Engineering Company .....Chambersburg, Pa.
National Tube Company .....Pittsburgh

INJECTORS—AUTOMATIC.
Penberthy Injector Co. ..Detroit, Mich.

ICE TOOLS.
Standard Scale & Supply Co...Pittsburgh

IGNITION BATTERY RHEOSTATS.
Cutler-Hammer Mfg. Co.....Milwaukee

INDUSTRIAL RAILWAYS.
Link-Belt Company .....Philadelphia

INSPECTION.
The Heinle Company .....Pittsburgh
Gulick-Henderson Co. .....Pittsburgh

IRON AND STEEL BARS.
Jones & Laughlin Steel Co....Pittsburgh

IRON FENCING.
W. N. Kratzer & Co. .....Pittsburgh

IRON ROOFS AND BUILDINGS.
Riter-Conley Mfg. Co. .....Pittsburgh
W. N. Kratzer & Co. .....Pittsburgh

"KEWANEE" UNIONS & SPECIALTIES.
National Tube Company .....Pittsburgh

LADLES.
Knox Pressed & Welded Steel Company .....Pittsburgh
Meehan Boiler & Con. Co..Lowellville,O.

LADLE BRICK.
West Va. Fire Clay Mfg. Co..Pittsburgh

LADLE LININGS.
Dover Fire Brick Co.....Cleveland, O.
Stowe-Fuller Co. .....Cleveland, O.

LATHES.
Baird Machinery Co.....Pittsburgh

LIFTING MAGNETS.
Cutler-Hammer Mfg. Co.....Milwaukee

LIMIT SWITCHES.
Cutler-Hammer Mfg. Co.....Milwaukee

LINK-BELTING.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

LOCOMOTIVE CRANES.
Industrial Works .....Bay City, Mich.
Link-Belt Company .....Philadelphia

LOCOMOTIVE FIRE BRICK
Bickford Fire Brick Company.....
.....Curwensville, Pa.
Dover Fire Brick Co.....Cleveland, O.
Stowe-Fuller Co. .....Cleveland, O.

MACHINE BOLTS.
Riter-Conley Mfg. Co. .....Pittsburgh

MACHINE RACK.
Standard Gauge Steel Company
.....Beaver Falls, Pa.

MACHINE TOOLS.
Baird Machinery Co.....Pittsburgh
H. J. Koontz .....Pittsburgh.

MACHINERY CASTINGS.
Wm. Swindell & Bros. .....Pittsburgh

MAGNESIA BRICK.
Stowe-Fuller Co. .....Cleveland, O.

MAGNESITE.
Stowe-Fuller Co. .....Cleveland, O.

MAGNETIC CLUTCHES.
Cutler-Hammer Mfg. Co.....Milwaukee

MAGNETIC SEPARATORS.
Cutler-Hammer Mfg. Co.....Milwaukee

MAGNETIC (Electric Lifting.)
Cutler-Hammer Mfg. Co.....Milwaukee

MALLEABLE CASTINGS.
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

MASTER SWITCHES.
Cutler-Hammer Mfg. Co.....Milwaukee

MAXIMUM SILENT CHAIN.
Link-Belt Company .....Philadelphia

METAL CONFORMATION.
The Heinle Company .....Pittsburgh

METALLURGISTTS.
Gulick-Henderson Co. .....Pittsburgh

MILLING MACHINES.
Baird Machinery Co.....Pittsburgh
Standard Bridge Tool Co.....Pittsburgh

MINE FANS.
Jeffrey Manufacturing Co..Columbus, O.

MINING MACHINERY & SUPPLIES.
C. O. Bartlett & Snow Co.....Cleveland
Connellsville Mfg. & Mine Supply Company .....Connellsville, Pa.
Doubleday-Hill Electric Co..Pittsburgh.
Jeffrey Manufacturing Co..Columbus, O.
Meehan Boiler & Con. Co..Lowellville,O.
Phillips Mine & Mill Supply Company .....Pittsburgh

MOTORS.
Crocker-Wheeler Co.....Ampere, N. J.
Doubleday-Hill Electric Co..Pittsburgh.

MONEL METAL.
Shimer & Company, Inc.....Pittsburgh

MULTIPLE PUNCHES.
Standard Bridge Tool Co.....Pittsburgh

OIL REFINERY WORK.
Standard Steel Tank & Manufacturing Company .....Pittsburgh, Pa

ORE CARS.
Jeffrey Manufacturing Co..Columbus, O.

ORE CONCENTRATORS & SEPARATORS.
McLanahan Stone Machine Company .....Hollidaysburg, Pa.

ORE HANDLING MACHINERY.
C. O. Bartlett & Snow Co.....Cleveland
Jeffrey Manufacturing Co..Columbus, O.
Link-Belt Company .....Philadelphia

OXYGEN.
The Linde Air Products Co....Buffalo

OXY-ACETYLENE WELDING AND CUTTING APPARATUS.
The Linde Air Products Co....Buffalo

PATENTS.
J. M. Nesbit .....Pittsburgh
Siggers & Siggers..Washington, D. C.

PAVING BRICK.
West Va. Fire Clay Mfg. Co..Pittsburgh

PAVING BLOCK.
West Va. Fire Clay Mfg. Co..Pittsburgh

"PECK" CARRIERS.
Link-Belt Company .....Philadelphia

PENSTOCKS.
Riter-Conley Mfg. Co. .....Pittsburgh
Standard Steel Tank & Manufacturing Company .....Pittsburgh, Pa.
Knox Pressed & Welded Steel Company .....Pittsburgh

PHOSPHOR BRONZE.
Shimer & Company, Inc.....Pittsburgh

PIG METALS (ORES, etc.)
McKeefrey & Co. .....Leetonia, O.
Rogers, Brown & Co.....Cincinnati, O.

PIG IRON.
Shimer & Company, Inc.....Pittsburgh

PILE DRIVERS.
Industrial Works .....Bay City, Mich.

PILLAR CRANES.
Industrial Works .....Bay City, Mich.
Northern Eng. Works ...Detroit, Mich.

PIPE AND PIPE FITTINGS.
Central Tube Co. .....Pittsburgh
National Tube Company .....Pittsburgh
U. S. Cast Iron & Pipe Foundry Company .....Scottdale, Pa.

PIPE COILS.
National Tube Company .....Pittsburgh

PIPES (Riveted Steel).
Riter-Conley Mfg. Co. .....Pittsburgh

PLATE WORK.
Knox Pressed & Welded Steel Company .....Pittsburgh
Meehan Boiler & Con. Co..Lowellville,O.
Riter-Conley Mfg. Co. .....Pittsburgh
Standard Steel Tank & Manufacturing Company .....Pittsburgh, Pa.

POLES (Tubing Steel.)
National Tube Company .....Pittsburgh

POWER PLANTS.
Doubleday-Hill Electric Co..Pittsburgh.
Mesta Machine Company ....Pittsburgh

PNEUMATIC TOOLS.
Connellsville Mfg. & Mine Supply Company .....Connellsville, Pa.
H. I. Koontz .....Pittsburgh.

PRESSES—DRILL AND DROP.
Baird Machinery Co.....Pittsburgh

PRESSURE REGULATORS.
Cutler-Hammer Mfg. Co.....Milwaukee

PULLEYS AND CLUTCHES.
Baird Machinery Co.....Pittsburgh
Jeffrey Manufacturing Co..Columbus, O.
Jones & Laughlin Steel Co....Pittsburgh
Link-Belt Company .....Philadelphia
Mesta Machine Company ....Pittsburgh

PUMP CONTROLLERS.
Cutler-Hammer Mfg. Co.....Milwaukee

PUMPS.
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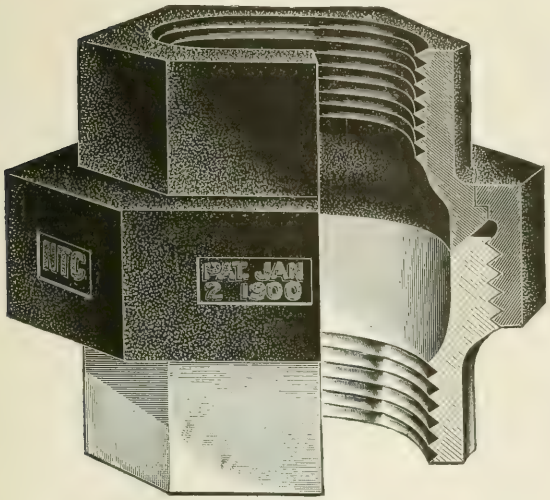

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¶ When two pipes are to be joined with the expectation that the joints are to be disconnected at some distant future time, or frequently in the immediate future, then the only fitting for the purpose is a union.

¶ Now comes the question: **"What kind of a union ?"**

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¶ Some mechanical men may be inclined to doubt the existence of such a union. But there is just exactly this kind of a union, and it is illustrated on this page—**The "Kewanee" Union**—"The Union with No Inserted Parts."

¶ **The "Kewanee" Union** always makes a steam, water, gas or air tight joint without a gasket. Look at the illustration. Note there are only three solid parts; the heavy malleable iron bottom; the heavy malleable ring and the solid brass thread end. NO INSERTED PARTS.

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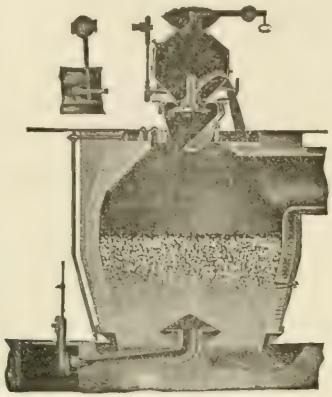

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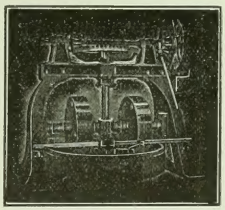

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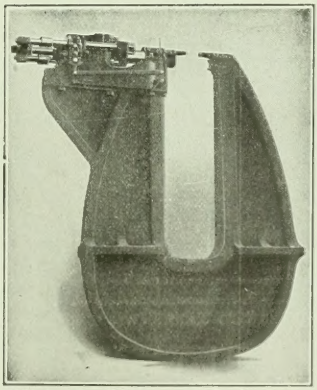

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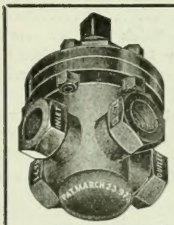

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